

70166USNP.ST25
SEQUENCE LISTING

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<120> Nucleic Acid Molecules Encoding Proteins Essential for Plant Growth and Development and Uses Thereof

<130> 70166USNP

<150> US 60/423,519
<151> 2002-11-04

<160> 73

<170> PatentIn version 3.1

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<211> 2007

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<222> (1)..(2007)

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 Lys Pro Gly Ser Phe Phe Gly Lys Asp Gln Tyr Asp Pro Thr Ser Ala
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Trp Glu Glu Ile Leu Thr Pro Glu Ala Asp Phe Ala Arg Lys Ser Leu
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Asn Glu Gly Glu Glu Val Pro Leu Gln Ser Pro Glu Ala Ile Glu Ala
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565

575

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Gly Asn Val Trp Tyr Asp Met Ser Tyr Asp Asp Ala Ile Lys Gln Thr
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Ile Glu Lys Arg Lys Glu Gly Ser Thr Leu Ala Ser Gln Glu Glu Glu
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Thr Glu Ser Glu Glu Glu Glu Glu Asp Asp Asp Asp Phe Asp Asp Phe
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Asp	Arg	Phe	Ile	Lys	Asn	Arg	Phe	Glu	Val	Pro	Ala	Lys	Leu	Tyr	Glu	225	230
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cag	atg	ttt	ggc	ccg	aac	agt	cca	caa	acg	tta	gaa	gag	ctt	gga	gat	768	
Gln	Met	Phe	Gly	Pro	Asn	Ser	Pro	Gln	Thr	Leu	Glu	Glu	Leu	Gly	Asp	245	250
				245					250					255			
ata	cca	gat	gca	gaa	acg	aga	tat	aaa	cag	tgg	aaa	gag	gag	cat	aaa	816	
Ile	Pro	Asp	Ala	Glu	Thr	Arg	Tyr	Lys	Gln	Trp	Lys	Glu	Glu	His	Lys	260	265
			260					265					270				
gat	gac	ccg	cca	agt	aat	cta	cct	cca	tgc	gac	atc	att	gat	aaa	ggt	864	
Asp	Asp	Pro	Pro	Ser	Asn	Leu	Pro	Pro	Cys	Asp	Ile	Ile	Asp	Lys	Gly	275	280
							280					285					
caa	gga	aag	cca	tat	gat	att	ttt	aat	gtc	gtg	aca	tct	cca	gaa	tgg	912	
Gln	Gly	Lys	Pro	Tyr	Asp	Ile	Phe	Asn	Val	Val	Thr	Ser	Pro	Glu	Trp	290	295
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Thr	Arg	Lys	Gly	Arg	Lys	Ala	Trp	Leu	Gln	Lys	Tyr	Ile	Pro	Ala	Val	325	330
				325					330					335			
cca	cat	gga	agc	aag	tat	aga	ttg	tat	ttc	aat	act	cct	gat	gga	ccg	1056	
Pro	His	Gly	Ser	Lys	Tyr	Arg	Leu	Tyr	Phe	Asn	Thr	Pro	Asp	Gly	Pro	340	345
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ctt	gaa	cga	gtg	cct	gct	tgg	gct	aca	tat	gtg	caa	cca	gag	gat	gaa	1104	
Leu	Glu	Arg	Val	Pro	Ala	Trp	Ala	Thr	Tyr	Val	Gln	Pro	Glu	Asp	Glu	355	360
							360					365					
gga	aag	caa	gct	tac	gca	att	cat	tgg	gaa	cct	tct	cct	gaa	gct	gca	1152	
Gly	Lys	Gln	Ala	Tyr	Ala	Ile	His	Trp	Glu	Pro	Ser	Pro	Glu	Ala	Ala	370	375
						375					380						

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tac gaa tgt cat gtt gga atc agt ggg tcc gag cca aaa gtt tca act Tyr Glu Cys His Val Gly Ile Ser Gly Ser Glu Pro Lys Val Ser Thr 405 410 415	1248
ttc gaa gaa ttt act aag aag gtc ctt cct cat gtg aaa aga gct gga Phe Glu Glu Phe Thr Lys Lys Val Leu Pro His Val Lys Arg Ala Gly 420 425 430	1296
tac aat gca atc cag ttg att ggt gtc cct gag cac aag gat tat ttt Tyr Asn Ala Ile Gln Leu Ile Gly Val Pro Glu His Lys Asp Tyr Phe 435 440 445	1344
act gtt ggt tat agg gtt acg aac ttc ttt gct gcc agt agc cga tat Thr Val Gly Tyr Arg Val Thr Asn Phe Phe Ala Ala Ser Ser Arg Tyr 450 455 460	1392
ggc acg cca gat gat ttc aaa cgg ttg gtt gat gag gca cat ggc cta Gly Thr Pro Asp Asp Phe Lys Arg Leu Val Asp Glu Ala His Gly Leu 465 470 475 480	1440
gga ctt ctt gtc ttt ttg gac atc gtg cat tct tat gca gca gct gat Gly Leu Leu Val Phe Leu Asp Ile Val His Ser Tyr Ala Ala Ala Asp 485 490 495	1488
cag atg gtt ggg ctt tct ctc ttc gat ggt tca aat gat tgc tat ttt Gln Met Val Gly Leu Ser Leu Phe Asp Gly Ser Asn Asp Cys Tyr Phe 500 505 510	1536
cat tat ggt aaa agg ggg cat cac aaa cac tgg ggc acc cgg atg ttc His Tyr Gly Lys Arg Gly His His Lys His Trp Gly Thr Arg Met Phe 515 520 525	1584
aaa tac ggt gat ttg gat gtt ctt cat ttt cta ata tca aat ttg aac Lys Tyr Gly Asp Leu Asp Val Leu His Phe Leu Ile Ser Asn Leu Asn 530 535 540	1632
tgg tgg att aca gag tat caa gtt gat ggt tac caa ttt cac tcg ctt Trp Trp Ile Thr Glu Tyr Gln Val Asp Gly Tyr Gln Phe His Ser Leu 545 550 555 560	1680
gcc tcg atg att tac acg cac aat ggg ttt gct tca ttt aac aac gat Ala Ser Met Ile Tyr Thr His Asn Gly Phe Ala Ser Phe Asn Asn Asp 565 570 575	1728
ttg gat gac tat tgc aat cag tat gtt gac cga gat gct ctg atg tac Leu Asp Asp Tyr Cys Asn Gln Tyr Val Asp Arg Asp Ala Leu Met Tyr 580 585 590	1776
ctc att ttg gcc aat gaa atc ctg cac gtt caa cat cca aat ata ata Leu Ile Leu Ala Asn Glu Ile Leu His Val Gln His Pro Asn Ile Ile 595 600 605	1824
aca att gct gag gat gca aca tat tac cct ggg ttg tgt gag cca gtt Thr Ile Ala Glu Asp Ala Thr Tyr Tyr Pro Gly Leu Cys Glu Pro Val 610 615 620	1872
tct caa ggt gga ctt gga ttt gat tat tat gtg aat ctt tct gcg tca Ser Gln Gly Gly Leu Gly Phe Asp Tyr Tyr Val Asn Leu Ser Ala Ser 625 630 635 640	1920

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cgt tca ttt gct gaa atc tta ttc ggt gga gtc gat aat ggt tct cct Arg Ser Phe Ala Glu Ile Leu Phe Gly Gly Val Asp Asn Gly Ser Pro 690 695 700	2112
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aga ctg att act ttt aca agt ggt ggc cgt gca tac ctc aat ttc atg Arg Leu Ile Thr Phe Thr Ser Gly Gly Arg Ala Tyr Leu Asn Phe Met 725 730 735	2208
gga aat gaa ttt gga cat cct gag agg gtt gag ttt cca acg cag agc Gly Asn Glu Phe 740 Gly His Pro Glu Arg Val Glu Phe Pro Thr Gln Ser 745 750	2256
aat aac ttc tcg ttt tca ctt gct aac cgc cgc tgg gac ctg ctg gaa Asn Asn Phe Ser Phe Ser Leu Ala Asn Arg Arg Trp Asp Leu Leu Glu 755 760 765	2304
agt gga gtg cat cat cac ttg ttt tcc ttt gac aag gag cta atg gac Ser Gly Val His His His Leu Phe Ser Phe Asp Lys Glu Leu Met Asp 770 775 780	2352
ttg gat aaa agc aag ggt atc ctt tca aga ggt ctg ccc agc atc cac Leu Asp Lys Ser Lys Gly Ile Leu Ser Arg Gly Leu Pro Ser Ile His 785 790 795 800	2400
cat gtg aat gat gca aat atg gtg att tct ttc tca agg ggt cct ttc His Val Asn Asp Ala Asn Met Val Ile Ser Phe Ser Arg Gly Pro Phe 805 810 815	2448
cta ttt atc ttt aac ttc cac cca tca aat tca tat gaa aag tat gat Leu Phe Ile Phe Asn Phe His Pro Ser Asn Ser Tyr Glu Lys Tyr Asp 820 825 830	2496
gtc ggt gta gag gaa gct ggt gaa tat acc atg ata ctg aac tcc gat Val Gly Val Glu Glu Ala Gly Glu Tyr Thr Met Ile Leu Asn Ser Asp 835 840 845	2544
gaa gta aag tat ggg ggt caa ggg att gta aca gaa gac cac tat ctt Glu Val Lys Tyr Gly Gly Gln Gly Ile Val Thr Glu Asp His Tyr Leu 850 855 860	2592
caa cgg tca att agc aag aga att gat ggt caa aga aat tgc tta gag Gln Arg Ser Ile Ser Lys Arg Ile Asp Gly Gln Arg Asn Cys Leu Glu 865 870 875 880	2640
gtg ttt ttg cct agc cgg act gcc caa gtt tac aag ttg acc cgg atc Val Phe Leu Pro Ser Arg Thr Ala Gln Val Tyr Lys Leu Thr Arg Ile	2688

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35 40 45

Arg Gln Glu Lys Gln Lys Lys Lys Ser Gln Ser Gln Ser Thr Ser Asp
50 55 60

Ala Glu Ala Gly Val Asp Pro Val Gly Phe Leu Thr Arg Leu Gly Ile
65 70 75 80

Ala Asp Arg Ile Phe Ala Gln Phe Leu Arg Glu Arg His Lys Ala Leu
85 90 95

Lys Asp Leu Lys Asp Glu Ile Phe Lys Arg His Phe Asp Phe Arg Asp
100 105 110

Phe Ala Ser Gly Phe Glu Leu Leu Gly Met His Arg His Met Glu His
115 120 125

Arg Val Asp Phe Met Asp Trp Gly Pro Gly Ser Arg Tyr Gly Ala Ile
130 135 140

Ile Gly Asp Phe Asn Gly Trp Ser Pro Thr Glu Asn Ala Ala Arg Glu
145 150 155 160

Gly Leu Phe Gly His Asp Asp Tyr Gly Tyr Trp Phe Ile Ile Leu Glu
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Asp Lys Leu Arg Glu Gly Glu Glu Pro Asp Glu Leu Tyr Phe Gln Gln
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Tyr Asn Tyr Val Asp Asp Tyr Asp Lys Gly Asp Ser Gly Val Ser Ala
 195 200 205

Glu Glu Ile Phe Gln Lys Ala Asn Asp Glu Tyr Trp Glu Pro Gly Glu
 210 215 220

Asp Arg Phe Ile Lys Asn Arg Phe Glu Val Pro Ala Lys Leu Tyr Glu
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Gln Met Phe Gly Pro Asn Ser Pro Gln Thr Leu Glu Glu Leu Gly Asp
 245 250 255

Ile Pro Asp Ala Glu Thr Arg Tyr Lys Gln Trp Lys Glu Glu His Lys
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Asp Asp Pro Pro Ser Asn Leu Pro Pro Cys Asp Ile Ile Asp Lys Gly
 275 280 285

Gln Gly Lys Pro Tyr Asp Ile Phe Asn Val Val Thr Ser Pro Glu Trp
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Thr Lys Lys Phe Tyr Glu Lys Glu Pro Pro Ile Pro Tyr Trp Leu Glu
 305 310 315 320

Thr Arg Lys Gly Arg Lys Ala Trp Leu Gln Lys Tyr Ile Pro Ala Val
 325 330 335

Pro His Gly Ser Lys Tyr Arg Leu Tyr Phe Asn Thr Pro Asp Gly Pro
 340 345 350

Leu Glu Arg Val Pro Ala Trp Ala Thr Tyr Val Gln Pro Glu Asp Glu
 355 360 365

Gly Lys Gln Ala Tyr Ala Ile His Trp Glu Pro Ser Pro Glu Ala Ala
 370 375 380

Tyr Lys Trp Lys Tyr Ser Lys Pro Lys Val Pro Glu Ser Leu Arg Ile
 385 390 395 400

Tyr Glu Cys His Val Gly Ile Ser Gly Ser Glu Pro Lys Val Ser Thr
 405 410 415

Phe Glu Glu Phe Thr Lys Lys Val Leu Pro His Val Lys Arg Ala Gly
 420 425 430

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Tyr Asn Ala Ile Gln Leu Ile Gly Val Pro Glu His Lys Asp Tyr Phe
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Thr Val Gly Tyr Arg Val Thr Asn Phe Phe Ala Ala Ser Ser Arg Tyr
 450 455 460

Gly Thr Pro Asp Asp Phe Lys Arg Leu Val Asp Glu Ala His Gly Leu
 465 470 475 480

Gly Leu Leu Val Phe Leu Asp Ile Val His Ser Tyr Ala Ala Ala Asp
 485 490 495

Gln Met Val Gly Leu Ser Leu Phe Asp Gly Ser Asn Asp Cys Tyr Phe
 500 505 510

His Tyr Gly Lys Arg Gly His His Lys His Trp Gly Thr Arg Met Phe
 515 520 525

Lys Tyr Gly Asp Leu Asp Val Leu His Phe Leu Ile Ser Asn Leu Asn
 530 535 540

Trp Trp Ile Thr Glu Tyr Gln Val Asp Gly Tyr Gln Phe His Ser Leu
 545 550 555 560

Ala Ser Met Ile Tyr Thr His Asn Gly Phe Ala Ser Phe Asn Asn Asp
 565 570 575

Leu Asp Asp Tyr Cys Asn Gln Tyr Val Asp Arg Asp Ala Leu Met Tyr
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Leu Ile Leu Ala Asn Glu Ile Leu His Val Gln His Pro Asn Ile Ile
 595 600 605

Thr Ile Ala Glu Asp Ala Thr Tyr Tyr Pro Gly Leu Cys Glu Pro Val
 610 615 620

Ser Gln Gly Gly Leu Gly Phe Asp Tyr Tyr Val Asn Leu Ser Ala Ser
 625 630 635 640

Glu Met Trp Val Ser Leu Leu Asp Asn Val Pro Asp Asn Glu Trp Ser
 645 650 655

Met Ser Lys Ile Val Ser Thr Leu Val Ala Asn Lys Glu Tyr Ala Asp
 660 665 670

Lys Met Leu Ser Tyr Ala Glu Asn His Asn Gln Ser Ile Ser Gly Gly
 675 680 685

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Arg Ser Phe Ala Glu Ile Leu Phe Gly Gly Val Asp Asn Gly Ser Pro
690 695 700

Gly Gly Lys Glu Leu Leu Asp Arg Gly Ile Ser Leu His Lys Met Ile
705 710 715 720

Arg Leu Ile Thr Phe Thr Ser Gly Gly Arg Ala Tyr Leu Asn Phe Met
725 730 735

Gly Asn Glu Phe Gly His Pro Glu Arg Val Glu Phe Pro Thr Gln Ser
740 745 750

Asn Asn Phe Ser Phe Ser Leu Ala Asn Arg Arg Trp Asp Leu Leu Glu
755 760 765

Ser Gly Val His His His Leu Phe Ser Phe Asp Lys Glu Leu Met Asp
770 775 780

Leu Asp Lys Ser Lys Gly Ile Leu Ser Arg Gly Leu Pro Ser Ile His
785 790 795 800

His Val Asn Asp Ala Asn Met Val Ile Ser Phe Ser Arg Gly Pro Phe
805 810 815

Leu Phe Ile Phe Asn Phe His Pro Ser Asn Ser Tyr Glu Lys Tyr Asp
820 825 830

Val Gly Val Glu Glu Ala Gly Glu Tyr Thr Met Ile Leu Asn Ser Asp
835 840 845

Glu Val Lys Tyr Gly Gly Gln Gly Ile Val Thr Glu Asp His Tyr Leu
850 855 860

Gln Arg Ser Ile Ser Lys Arg Ile Asp Gly Gln Arg Asn Cys Leu Glu
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Leu Arg Ile

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Leu Ile Pro Lys 20 Ser Gln Lys Phe 25 His Thr Leu Gln Ser Phe 30 Arg Asn	
cct aat ttc atc tcc atc cca aaa atc tca gcc tcc acg aac aat cca	144
Pro Asn Phe 35 Ile Ser Ile Pro Lys 40 Ile Ser Ala Ser Thr 45 Asn Asn Pro	
aca aca aca acg aat cgg tcg atc tcc gac gcg act aaa ttc gct aag	192
Thr Thr Thr Thr Asn Arg Ser 55 Ile Ser Asp Ala Thr 60 Lys Phe Ala Lys	
tca gtg tta ttc ata cct cct ggt gta gag att gag gaa cta aca gat	240
Ser Val Leu Phe Ile Pro 70 Pro Gly Val Glu Ile Glu Glu Leu Thr Asp 80	
gat atg gtt ctt ccg ggt tca aat atc gta atc gga cct ttt gcg ggt	288
Asp Met Val Leu 85 Pro Gly Ser Asn Ile Val 90 Ile Gly Pro Phe 95 Ala Gly	
cat tca caa atc aaa gaa gtt gaa ttt gtt aaa agt agt gct cgt gct	336
His Ser Gln 100 Ile Lys Glu Val Glu Phe 105 Val Lys Ser Ser 110 Ala Arg Ala	
aga gat tgt cct aaa gat gat cgt cct gag att gcg att ttg ggt cgt	384
Arg Asp Cys 115 Pro Lys Asp Asp Arg Pro Glu Ile Ala Ile 125 Leu Gly Arg	
tct aat gtt ggc aag tct tcg ctt atc aat tgt ttg gtt cgt aag aaa	432
Ser Asn Val Gly Lys Ser Ser 135 Leu Ile Asn Cys 140 Leu Val Arg Lys Lys	
gaa gtt gct ctt act tct aag aaa cct ggg aag act cag ctt ata aat	480
Glu Val Ala Leu Thr 150 Ser Lys Lys Pro Gly Lys 155 Thr Gln Leu Ile Asn 160	
cac ttc ttg gtg aat aag agt tgg tac att gtg gat ttg cct ggt tat	528
His Phe Leu Val 165 Asn Lys Ser Trp Tyr 170 Ile Val Asp Leu Pro 175 Gly Tyr	
gga ttt gct aaa gtt tca gat gct gcg aaa aca gat tgg tct gcg ttt	576
Gly Phe Ala Lys 180 Val Ser Asp Ala 185 Lys Thr Asp Trp Ser 190 Ala Phe	

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 Thr Lys Gly Tyr Phe Leu Asn Arg Asp Ser Leu Val Cys Val Leu Leu
 195 200 205
 ctc atc gat gca agt gtt cct cct cag aag att gat ctt gat tgt gct 672
 Leu Ile Asp Ala Ser Val Pro Pro Gln Lys Ile Asp Leu Asp Cys Ala
 210 215 220
 aat tgg ctt ggt cgc aac aat gta ccg atg act ttc gtg ttt acg aaa 720
 Asn Trp Leu Gly Arg Asn Asn Val Pro Met Thr Phe Val Phe Thr Lys
 225 230 235 240
 tgc gat aaa atg aaa gca acg aaa ggg aaa aga cct gat gag aac att 768
 Cys Asp Lys Met Lys Ala Thr Lys Gly Lys Arg Pro Asp Glu Asn Ile
 245 250 255
 aaa gct ttc caa caa atc att aga gag aat ttt aaa gta cat cct cct 816
 Lys Ala Phe Gln Gln Ile Ile Arg Glu Asn Phe Lys Val His Pro Pro
 260 265 270
 tgg att ttg acg agt agt gta tct ggt tta ggc aga gac gag ctt ctt 864
 Trp Ile Leu Thr Ser Ser Val Ser Gly Leu Gly Arg Asp Glu Leu Leu
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Pro Asn Phe Ile Ser Ile Pro Lys Ile Ser Ala Ser Thr Asn Asn Pro
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Thr Thr Thr Thr Asn Arg Ser Ile Ser Asp Ala Thr Lys Phe Ala Lys
 50 55 60

Ser Val Leu Phe Ile Pro Pro Gly Val Glu Ile Glu Glu Leu Thr Asp
 65 70 75 80

Asp Met Val Leu Pro Gly Ser Asn Ile Val Ile Gly Pro Phe Ala Gly
 Page 20

His Ser Gln Ile Lys Glu Val Glu Phe Val Lys Ser Ser Ala Arg Ala
 100 105 110

Arg Asp Cys Pro Lys Asp Asp Arg Pro Glu Ile Ala Ile Leu Gly Arg
 115 120 125

Ser Asn Val Gly Lys Ser Ser Leu Ile Asn Cys Leu Val Arg Lys Lys
 130 135 140

Glu Val Ala Leu Thr Ser Lys Lys Pro Gly Lys Thr Gln Leu Ile Asn
 145 150 155 160

His Phe Leu Val Asn Lys Ser Trp Tyr Ile Val Asp Leu Pro Gly Tyr
 165 170 175

Gly Phe Ala Lys Val Ser Asp Ala Ala Lys Thr Asp Trp Ser Ala Phe
 180 185 190

Thr Lys Gly Tyr Phe Leu Asn Arg Asp Ser Leu Val Cys Val Leu Leu
 195 200 205

Leu Ile Asp Ala Ser Val Pro Pro Gln Lys Ile Asp Leu Asp Cys Ala
 210 215 220

Asn Trp Leu Gly Arg Asn Asn Val Pro Met Thr Phe Val Phe Thr Lys
 225 230 235 240

Cys Asp Lys Met Lys Ala Thr Lys Gly Lys Arg Pro Asp Glu Asn Ile
 245 250 255

Lys Ala Phe Gln Gln Ile Ile Arg Glu Asn Phe Lys Val His Pro Pro
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Thr	Ser	Ala	Gly	Gly	Pro	Pro	Val	Ser	Leu	Phe	Arg	His	Arg	Ile	Gln	
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cgc	ctc	aga	gct	tct	cat	ctc	cgt	gaa	ttc	tcg	aaa	tta	cgt	tta	aat	144
Arg	Leu	Arg	Ala	Ser	His	Leu	Arg	Glu	Phe	Ser	Lys	Leu	Arg	Leu	Asn	
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ttt	cca	cta	atc	cgc	gcg	gat	agg	cgg	ttt	ctc	gga	aat	agt	gat	gct	192
Phe	Pro	Leu	Ile	Arg	Ala	Asp	Arg	Arg	Phe	Leu	Gly	Asn	Ser	Asp	Ala	
	50					55					60					

ccg	agc	tgt	tcg	act	tgc	ata	cat	agt	ctg	gtc	gaa	agt	gtt	tcc	gaa	240
Pro	Ser	Cys	Ser	Thr	Cys	Ile	His	Ser	Leu	Val	Glu	Ser	Val	Ser	Glu	
65					70					75					80	

gag	ctc	gaa	tcc	atc	agc	aga	cgc	aag	gga	agc	cga	atg	aga	gtt	cgc	288
Glu	Leu	Glu	Ser	Ile	Ser	Arg	Arg	Lys	Gly	Ser	Arg	Met	Arg	Val	Arg	
				85					90					95		

gcc	agt	gta	aag	gtg	aaa	tta	aca	agc	tac	gga	gag	gtt	cta	gag	gat	336
Ala	Ser	Val	Lys	Val	Lys	Leu	Thr	Ser	Tyr	Gly	Glu	Val	Leu	Glu	Asp	
			100					105					110			

aag	cta	gta	aac	cag	gag	cta	gag	gct	ggt	ttg	ctt	ctg	gag	ttt	aag	384
Lys	Leu	Val	Asn	Gln	Glu	Leu	Glu	Ala	Gly	Leu	Leu	Leu	Glu	Phe	Lys	
		115					120					125				

aag	gac	gca	gac	aga	gtg	ttg	ttg	gca	gtt	ctt	cat	aga	cgt	gat	ggc	432
Lys	Asp	Ala	Asp	Arg	Val	Leu	Leu	Ala	Val	Leu	His	Arg	Arg	Asp	Gly	
	130					135					140					

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145					150					155					160	

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Lys	Pro	Gln	Gln	Ile	Thr	Tyr	Ile	Val	Pro	Asn	Val	Tyr	Asn	Phe	Asp	
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cat	aca	gga	ctt	act	gat	ttt	ctc	caa	agg	gct	caa	gat	aac	ttg	gat	576
His	Thr	Gly	Leu	Thr	Asp	Phe	Leu	Gln	Arg	Ala	Gln	Asp	Asn	Leu	Asp	
			180					185					190			

ccc	caa	ctg	ctt	gag	ttt	gct	tgg	atg	gag	tta	ctt	gag	aag	aac	aaa	624
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cgg cct act gaa cag gtg gaa gag ctt tta cga agg caa cgc gtg aag Arg Pro Thr Glu Gln Val Glu Glu Leu Leu Arg Arg Gln Arg Val Lys			816
gag gca gaa gat aaa gag ttt cag gag ttt att caa ttg ctg aag tct Glu Ala Glu Asp Lys Glu Phe Gln Glu Phe Ile Gln Leu Leu Lys Ser 285			864
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Ile	Ile	Arg	Pro	Thr	Tyr	Met	Leu	Thr	Tyr	Glu	Ser	Ala	Ser	Glu	Leu	
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Leu Lys Ser Met Gly Leu Gln Lys Thr Ser Val Ser Ala Leu Asn Leu
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340

345

350

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gca Ala 865	gta Val	aat Asn	cag Gln	aaa Lys	aga Arg 870	agg Arg	gtt Val	cac His	ttg Leu 875	act Thr	tta Leu	gag Glu	ctt Leu	ccc Pro	tgg Trp 880	2640
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gaa Glu	cgc Arg 915	cgc Arg	ttt Phe	gcc Ala	tct Ser	att Ile	gtt Val 920	gca Ala	aag Lys	aga Arg	cta Leu	gaa Glu 925	aca Thr	ctt Leu	ggc Gly	2784
gct Ala	tta Leu 930	aca Thr	cag Gln	gga Gly	gac Asp	cgc Arg 935	agg Arg	gct Ala	ggg Gly	ccc Pro	tcc Ser 940	ggg Gly	cct Pro	tct Ser	ttg Leu	2832
agt Ser	gcg Ala	tat Tyr	aat Asn	tat Tyr	gat Asp	agt Ser	aac Asn	ttt Phe	ggc Gly	aaa Lys	aaa Lys	tcc Ser	ttg Leu	atg Met	gtg Val	2880

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Gly Cys Ser Ile Asp Glu Pro Glu Thr Val Lys Glu Phe Leu Thr Lys													
	980 985 990												
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	1115 1120 1125												
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Thr	Val	Gly	Arg	Arg	Ile	Gln	Glu	Val	Asn	Val	Val	Gly	Gly	Leu	
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Ile	Leu	Pro	Ile	Trp	Gly	Thr	Ile	Glu	Lys	Ala	Leu	Ser	Lys	Gln	
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Thr	Thr	Asp	Asn	Gln	Arg	Ile	Val	Gly	Leu	Ser	Ile	Pro	Asn	Ala	
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Ser	Arg	Ala	Arg	Pro	Gln	Phe	Pro	Gln	Ser	Pro	Gln	Gln	Pro	Pro	Gln
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Glu Glu Val Asn Glu Glu Ala Ile Glu Val Glu Arg Glu Glu Asp Glu
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Gly Gly Thr Ala Gly Glu Thr Phe Met Asp Tyr Arg Pro Pro Lys Leu
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325 330 335

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Gln Asp Lys Ile Pro Gln Ala Arg Val Ile Tyr Cys Ser Ala Thr Gly
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Ala Ser Glu Pro Arg Asn Met Gly Tyr Met Val Arg Leu Gly Leu Trp
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Asp Lys Gly Gly Thr Gly Ala Leu Glu Leu Val Ala Met Asp Met Lys
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Phe Glu Ile Val Glu Ala Arg Leu Glu Ala Gly Met Glu Ala Met Tyr
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Arg Leu Tyr Trp Ser Ser His Gln Arg Phe Phe Arg His Leu Cys Met
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Ser Ala Lys Val Pro Val Thr Val Arg Leu Ala Lys Lys Ala Leu Ser
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Thr Asn Lys Cys Val Val Ile Gly Leu Gln Ser Thr Gly Glu Ala Arg
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580

585

590

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Ser Gly Pro Arg Glu Leu Leu Leu Lys Phe Val Glu Glu Asn Tyr Pro
610 615 620

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Leu Gln Arg Lys Arg His Ser Ala Ser Pro Gly Val Ser Ile Arg Gly
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Asp Leu Glu Ser Glu Ala Asp Ser Ala Asp Asp Ser Asn Asp Ser Asp
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755 760 765

Lys Ile Ile Glu Ile Ile Arg Ser Leu Asn Leu Pro Asn Asn Pro Leu
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785 790 795 800

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Glu	Ser	Gly	Gly	Ser	Glu	Gly	Gly	Lys	Lys	Val	Thr	Asn	Asn	Ser	Val	
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Tyr Ile Lys Met Phe Gln Gly Leu Cys Ser Leu Tyr Ala Phe Cys Phe
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Ala Tyr Gln Tyr Ile Ala Asp Gly Lys Leu Lys Asp Asp Val Lys Ala
 Page 42

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280

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Leu Thr Arg Thr Lys Leu Lys Gln Phe Gln Glu Trp Ile Ile Glu Lys
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Leu	Ser	Leu	Phe	Ala	Trp	Ile	Val	Val	Val	Ser	Pro	Ile	Ala	Ile	Leu	
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Ile	Gly	Trp	Gly	Ser	Trp	Leu	Ile	Val	Ile	Leu	Asp	Arg	His	Ile	Ile	
				85					90					95		
ggg	ctg	gcg	ata	ata	atg	gct	gga	rca	gcc	ctt	tta	ctg	gca	ttc	tac	336
Gly	Leu	Ala	Ile	Ile	Met	Ala	Gly	Xaa	Ala	Leu	Leu	Leu	Ala	Phe	Tyr	
			100					105					110			
tca	atc	atg	ctt	tgg	tgg	agg	acc	cag	tgg	caa	agc	tca	aga	gct	gtc	384
Ser	Ile	Met	Leu	Trp	Trp	Arg	Thr	Gln	Trp	Gln	Ser	Ser	Arg	Ala	Val	
		115					120					125				
gct	tta	ctt	ctc	ctt	ctt	ggt	gtt	gcc	tta	cta	tgt	gcg	tat	gaa	ctc	432
Ala	Leu	Leu	Leu	Leu	Leu	Gly	Val	Ala	Leu	Leu	Cys	Ala	Tyr	Glu	Leu	
	130					135					140					
tgt	gct	gtc	tat	gtt	acg	gct	ggt	gcg	cat	gca	tct	cag	caa	tat	tct	480
Cys	Ala	Val	Tyr	Val	Thr	Ala	Gly	Ala	His	Ala	Ser	Gln	Gln	Tyr	Ser	
145					150					155					160	
cct	tct	ggt	ttc	ttt	ttc	ggt	gta	tca	gca	atc	gcg	ttg	gca	att	aac	528
Pro	Ser	Gly	Phe	Phe	Phe	Gly	Val	Ser	Ala	Ile	Ala	Leu	Ala	Ile	Asn	
				165					170					175		
atg	cta	ttt	atc	tgc	cgc	atg	gtc	ttt	aat	gga	aat	ggt	tta	gat	gtg	576
Met	Leu	Phe	Ile	Cys	Arg	Met	Val	Phe	Asn	Gly	Asn	Gly	Leu	Asp	Val	
			180					185					190			
gac	gaa	tat	gta	agg	agg	gca	tat	aaa	ttt	gct	tat	tca	gat	tgt	ata	624
Asp	Glu	Tyr	Val	Arg	Arg	Ala	Tyr	Lys	Phe	Ala	Tyr	Ser	Asp	Cys	Ile	
		195					200					205				
gaa	gtg	ggt	cct	gtg	gct	tgt	ttg	cct	gaa	cct	cct	gat	cct	aat	gaa	672
Glu	Val	Gly	Pro	Val	Ala	Cys	Leu	Pro	Glu	Pro	Pro	Asp	Pro	Asn	Glu	
	210					215					220					
tta	tat	ccc	cgg	caa	acc	agc	agg	gct	tca	cat	ctt	ggc	ctt	ctg	tac	720
Leu	Tyr	Pro	Arg	Gln	Thr	Ser	Arg	Ala	Ser	His	Leu	Gly	Leu	Leu	Tyr	
225					230					235					240	
ctg	ggc	tca	ctc	gta	gtt	ctc	ctt	gcc	tac	tca	gtc	cta	tat	ggt	ctc	768
Leu	Gly	Ser	Leu	Val	Val	Leu	Leu	Ala	Tyr	Ser	Val	Leu	Tyr	Gly	Leu	
				245					250					255		
aca	gct	agg	gaa	tca	cgt	tgg	ctt	gga	gga	atc	aca	tca	gct	gca	gtt	816
Thr	Ala	Arg	Glu	Ser	Arg	Trp	Leu	Gly	Gly	Ile	Thr	Ser	Ala	Ala	Val	
			260					265					270			
att	gtt	ctt	gac	tgg	aat	att	ggg	gca	tgc	ttg	tat	ggg	ttt	aag	ctt	864
Ile	Val	Leu	Asp	Trp	Asn	Ile	Gly	Ala	Cys	Leu	Tyr	Gly	Phe	Lys	Leu	
		275					280					285				
ctt	cag	aat	cgt	gtt	ctg	gca	ctt	ttt	gtt	gct	ggc	ata	tcc	cgt	ctt	912
Leu	Gln	Asn	Arg	Val	Leu	Ala	Leu	Phe	Val	Ala	Gly	Ile	Ser	Arg	Leu	
	290					295					300					

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ttc	cta	ata	tgt	ttt	ggc	ata	cac	tac	tgg	tac	cta	ggg	cat	tgt	att	960
Phe	Leu	Ile	Cys	Phe	Gly	Ile	His	Tyr	Trp	Tyr	Leu	Gly	His	Cys	Ile	
305					310					315					320	
agt	tac	att	ttc	gta	gca	tca	gtt	cta	tca	ggg	gct	gct	gtt	tct	cgg	1008
Ser	Tyr	Ile	Phe	Val	Ala	Ser	Val	Leu	Ser	Gly	Ala	Ala	Val	Ser	Arg	
				325					330					335		
cat	cta	tct	ata	aca	gac	cca	tca	gct	gca	aga	aga	gat	gcc	tta	cag	1056
His	Leu	Ser	Ile	Thr	Asp	Pro	Ser	Ala	Ala	Arg	Arg	Asp	Ala	Leu	Gln	
			340					345					350			
agc	aca	gtg	atc	cgc	ttg	aga	gaa	ggg	ttt	cgg	aga	aaa	gag	cag	aat	1104
Ser	Thr	Val	Ile	Arg	Leu	Arg	Glu	Gly	Phe	Arg	Arg	Lys	Glu	Gln	Asn	
		355					360					365				
agt	tct	tca	agt	tct	tca	gat	ggg	tgt	ggc	tca	agt	ata	aaa	aga	agt	1152
Ser	Ser	Ser	Ser	Ser	Ser	Asp	Gly	Cys	Gly	Ser	Ser	Ile	Lys	Arg	Ser	
	370					375					380					
agt	agt	atc	gat	gct	ggc	cat	act	ggg	tgt	act	aat	gaa	gca	aat	cgt	1200
Ser	Ser	Ile	Asp	Ala	Gly	His	Thr	Gly	Cys	Thr	Asn	Glu	Ala	Asn	Arg	
385					390					395					400	
acg	gca	gaa	tct	tgc	acg	gct	gac	aat	cta	act	cga	aca	ggc	agc	tct	1248
Thr	Ala	Glu	Ser	Cys	Thr	Ala	Asp	Asn	Leu	Thr	Arg	Thr	Gly	Ser	Ser	
				405					410					415		
cag	gag	gga	atc	aat	agc	gac	aaa	agc	gaa	gaa	agt	gga	aga	cca	agc	1296
Gln	Glu	Gly	Ile	Asn	Ser	Asp	Lys	Ser	Glu	Glu	Ser	Gly	Arg	Pro	Ser	
			420					425				430				
tta	ggg	tta	cgt	agt	agt	tca	tgt	cgt	tct	gtg	gtc	caa	gag	ccc	gaa	1344
Leu	Gly	Leu	Arg	Ser	Ser	Ser	Cys	Arg	Ser	Val	Val	Gln	Glu	Pro	Glu	
		435					440					445				
gca	gga	acg	tct	tat	ttt	atg	gac	aaa	gtt	tct	gat	caa	aat	aac	act	1392
Ala	Gly	Thr	Ser	Tyr	Phe	Met	Asp	Lys	Val	Ser	Asp	Gln	Asn	Asn	Thr	
	450					455					460					
ctt	gtt	gtt	tgt	tcg	agc	agt	ggg	cta	gat	agc	caa	ggg	tac	gag	tct	1440
Leu	Val	Val	Cys	Ser	Ser	Ser	Gly	Leu	Asp	Ser	Gln	Gly	Tyr	Glu	Ser	
465					470					475					480	
agc	aca	tcg	aat	tct	gca	aac	cag	cag	ctt	ttg	gat	atg	aat	ttg	gct	1488
Ser	Thr	Ser	Asn	Ser	Ala	Asn	Gln	Gln	Leu	Leu	Asp	Met	Asn	Leu	Ala	
				485					490					495		
ctt	gct	ttc	cag	gac	cag	tta	aac	aat	cct	agg	ata	gcc	tcg	ata	ctt	1536
Leu	Ala	Phe	Gln	Asp	Gln	Leu	Asn	Asn	Pro	Arg	Ile	Ala	Ser	Ile	Leu	
			500					505					510			
aag	aag	aaa	sma	aaa	gaa	ggg	gat	ctt	gaa	ctg	act	aat	ttg	ctg	caa	1584
Lys	Lys	Lys	Xaa	Lys	Glu	Gly	Asp	Leu	Glu	Leu	Thr	Asn	Leu	Leu	Gln	
		515					520					525				
gac	aag	ggg	ttg	gac	cct	aac	ttt	gct	gta	atg	ttg	aag	gaa	aaa	aac	1632
Asp	Lys	Gly	Leu	Asp	Pro	Asn	Phe	Ala	Val	Met	Leu	Lys	Glu	Lys	Asn	
	530					535					540					
ttg	gat	cct	gga	aaa	aac	ttg	ggg	ctn	act	ata	ttg	gca	cta	ctt	cag	1680
Leu	Asp	Pro	Gly	Lys	Asn	Leu	Gly	Xaa	Thr	Ile	Leu	Ala	Leu	Leu	Gln	
545					550					555					560	

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agg Arg	agt Ser	agt Ser	ttg Leu	gat Asp 565	gca Ala	gat Asp	aga Arg	gat Asp	cac His 570	cgc Arg	gac Asp	aat Asn	act Thr	gat Asp 575	att Ile	1728
aca Thr	atc Ile	att Ile	gac Asp 580	tca Ser	aac Asn	agt Ser	gtt Val	gac Asp 585	aat Asn	act Thr	ttg Leu	cca Pro	aat Asn 590	cag Gln	att Ile	1776
tct Ser	tta Leu	tcc Ser 595	gaa Glu	gaa Glu	ttg Leu	aga Arg	ctc Leu 600	cgt Arg	gga Gly	cta Leu	gag Glu	aag Lys 605	tgg Trp	ctt Leu	aag Lys	1824
ttg Leu	tct Ser 610	aga Arg	ctt Leu	ctt Leu	ctg Leu	cac His 615	cat His	gta Val	gcg Ala	ggg Gly	aca Thr 620	cca Pro	gag Glu	aga Arg	gca Ala	1872
tgg Trp 625	ggc Gly	ctc Leu	ttt Phe	agt Ser	ctt Leu 630	gtc Val	ttt Phe	atc Ile	ctt Leu	gaa Glu 635	aca Thr	atc Ile	att Ile	gtg Val	gcc Ala 640	1920
att Ile	ttt Phe	cgc Arg	cca Pro	aag Lys 645	acc Thr	atc Ile	acg Thr	att Ile	ata Ile 650	aat Asn	tct Ser	agt Ser	cat His	caa Gln 655	cag Gln	1968
ttc Phe	gaa Glu	ttt Phe	ggt Gly 660	ttc Phe	tct Ser	gtg Val	ctg Leu	cta Leu 665	ttg Leu	tca Ser	cct Pro	gtt Val	gtc Val 670	tgt Cys	tca Ser	2016
ata Ile	atg Met	gct Ala 675	ttt Phe	ctt Leu	cgg Arg	tct Ser	ctt Leu 680	caa Gln	gtt Val	gag Glu	gaa Glu	atg Met 685	gcc Ala	ttg Leu	aca Thr	2064
tca Ser	aaa Lys 690	tct Ser	cgc Arg	aag Lys	tat Tyr	ggc Gly 695	ttt Phe	gtt Val	gcc Ala	tgg Trp	ctt Leu 700	ctg Leu	agc Ser	aca Thr	tca Ser	2112
gtt Val 705	gga Gly	ttg Leu	tca Ser	ctc Leu	tcg Ser 710	ttc Phe	ttg Leu	agt Ser	aaa Lys	tcg Ser 715	tca Ser	gta Val	ctt Leu	ctg Leu	gga Gly 720	2160
ata Ile	tcc Ser	ttg Leu	act Thr	gtg Val 725	ccc Pro	ctc Leu	atg Met	gca Ala	gca Ala 730	tgc Cys	ctg Leu	tct Ser	att Ile	gct Ala 735	gtt Val	2208
ccc Pro	ata Ile	tgg Trp	atg Met 740	cat His	aat Asn	ggg Gly	tac Tyr	caa Gln 745	ttt Phe	tgg Trp	gtt Val	cca Pro	cag Gln 750	tta Leu	tca Ser	2256
tgt Cys	ggt Gly	gac Asp 755	cag Gln	gca Ala	aga Arg	gat Asp	tta Leu 760	cga Arg	tct Ser	ccc Pro	agg Arg	ata Ile 765	aag Lys	ggg Gly	ttt Phe	2304
att Ile	ctt Leu 770	tgg Trp	att Ile	tgt Cys	gtt Val 775	gtg Val	ttg Leu	ttt Phe	gcg Ala	ggt Gly	tct Ser 780	gta Val	att Ile	tct Ser	ctt Leu	2352
ggt Gly 785	gcg Ala	att Ile	ata Ile	tct Ser	gct Ala 790	aaa Lys	cct Pro	ttg Leu	gat Asp	gat Asp 795	tta Leu	aag Lys	tat Tyr	aag Lys	ctg Leu 800	2400
ttt Phe	agt Ser	gcc Ala	aga Arg	gaa Glu	aac Asn	aac Asn	gtc Val	acg Thr	tca Ser	cca Pro	tat Tyr	aca Thr	tct Ser	tct Ser	gta Val	2448

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810

805															815															
tac	ctt	ggt	tgg	gca	atg	tca	tct	gga	att	gct	tta	gta	gtt	acc	gcc															2496
Tyr	Leu	Gly	Trp	Ala	Met	Ser	Ser	Gly	Ile	Ala	Leu	Val	Val	Thr	Ala															
			820					825					830																	
att	cta	cca	ata	gtt	tca	tgg	ttt	gca	act	tat	agg	ttt	tcc	cac	tct															2544
Ile	Leu	Pro	Ile	Val	Ser	Trp	Phe	Ala	Thr	Tyr	Arg	Phe	Ser	His	Ser															
			835				840					845																		
tct	gct	gtc	tgt	ctc	atg	ata	ttc	tca	gtt	gtt	ctc	gtg	gca	ttt	tgt															2592
Ser	Ala	Val	Cys	Leu	Met	Ile	Phe	Ser	Val	Val	Leu	Val	Ala	Phe	Cys															
	850					855					860																			
gga	act	tca	tat	ttg	gaa	gtt	gta	aaa	tct	aga	gat	gat	cag	ttg	ccc															2640
Gly	Thr	Ser	Tyr	Leu	Glu	Val	Val	Lys	Ser	Arg	Asp	Asp	Gln	Leu	Pro															
865					870				875						880															
aca	aag	ggt	gat	ttc	ctt	gcg	gcc	ttg	ctt	cca	ctt	gca	tgc	att	ccg															2688
Thr	Lys	Gly	Asp	Phe	Leu	Ala	Ala	Leu	Leu	Pro	Leu	Ala	Cys	Ile	Pro															
				885					890					895																
gcg	ctg	ctt	tca	cta	tgc	tgt	ggg	atg	gtt	aaa	tgg	aag	gac	gat	tgt															2736
Ala	Leu	Leu	Ser	Leu	Cys	Cys	Gly	Met	Val	Lys	Trp	Lys	Asp	Asp	Cys															
			900					905					910																	
tgg	ata	ctc	tct	cga	ggt	gta	tat	gtt	ttc	ttt	tca	ata	ggt	ctt	ctt															2784
Trp	Ile	Leu	Ser	Arg	Gly	Val	Tyr	Val	Phe	Phe	Ser	Ile	Gly	Leu	Leu															
		915					920					925																		
ctt	ctt	ttt	ggt	gcg	ata	gca	gct	gtc	att	gca	gtc	aaa	cca	tgg	acg															2832
Leu	Leu	Phe	Gly	Ala	Ile	Ala	Ala	Val	Ile	Ala	Val	Lys	Pro	Trp	Thr															
	930					935					940																			
ata	ggc	gta	tct	ttt	ctc	tta	gtt	ctt	ttc	ctt	atg	gtg	gta	aca	att															2880
Ile	Gly	Val	Ser	Phe	Leu	Leu	Val	Leu	Phe	Leu	Met	Val	Val	Thr	Ile															
945					950				955						960															
ggt	gta	atc	cat	ctt	tgg	gcg	tca	aac	aat	ttc	tat	tta	acc	agg	aaa															2928
Gly	Val	Ile	His	Leu	Trp	Ala	Ser	Asn	Asn	Phe	Tyr	Leu	Thr	Arg	Lys															
				965					970					975																
cag	aca	tcc	ttt	gtc	tgc	ttt	ctt	gct	ctt	ctt	ttg	ggt	ttg	gcc	gca															2976
Gln	Thr	Ser	Phe	Val	Cys	Phe	Leu	Ala	Leu	Leu	Leu	Gly	Leu	Ala	Ala															
			980					985					990																	
ttc	ctt	ctc	gga	tgg	cat	caa	gat	aaa	gca	ttt	gct	gga	gca	tct	gtt															3024
Phe	Leu	Leu	Gly	Trp	His	Gln	Asp	Lys	Ala	Phe	Ala	Gly	Ala	Ser	Val															
		995					1000					1005																		
ggt	tac	ttt	aca	ttc	ctg	tct	ctg	ttg	gct	gga	aga	gca	tta	gct																3069
Gly	Tyr	Phe	Thr	Phe	Leu	Ser	Leu	Leu	Ala	Gly	Arg	Ala	Leu	Ala																
	1010					1015				1020																				
gtt	ctt	cta	tcc	cca	cca	att	gta	gta	tat	tct	cca	agg	gtg	cta																3114
Val	Leu	Leu	Ser	Pro	Pro	Ile	Val	Val	Tyr	Ser	Pro	Arg	Val	Leu																
	1025					1030					1035																			
cca	gta	tat	gtc	tac	gat	gct	cat	gct	gat	tgc	gga	aag	aat	gtc																3159
Pro	Val	Tyr	Val	Tyr	Asp	Ala	His	Ala	Asp	Cys	Gly	Lys	Asn	Val																
	1040					1045				1050																				
agt	gct	gca	ttt	ctt	gtc	ctg	tat	gga	att	gct	ttg	gca	aca	gaa																3204

Ser	Ala	Ala	Phe	Leu	Val	Leu	Tyr	Gly	Ile	Ala	Leu	Ala	Thr	Glu	
1055						1060					1065				
ggc	tgg	ggc	gtt	gtt	gct	agt	ctg	ata	att	tat	cct	ccg	ttt	gcg	3249
Gly	Trp	Gly	Val	Val	Ala	Ser	Leu	Ile	Ile	Tyr	Pro	Pro	Phe	Ala	
1070						1075					1080				
ggc	gct	gct	gta	tca	gct	atc	acc	ctt	gta	gta	gcc	ttt	ggg	ttt	3294
Gly	Ala	Ala	Val	Ser	Ala	Ile	Thr	Leu	Val	Val	Ala	Phe	Gly	Phe	
1085						1090					1095				
gct	gtt	tct	cgc	cca	tgt	ttg	act	ctt	gag	atg	atg	gag	gtt	gct	3339
Ala	Val	Ser	Arg	Pro	Cys	Leu	Thr	Leu	Glu	Met	Met	Glu	Val	Ala	
1100						1105					1110				
gta	cgc	ttt	ctt	agc	aag	gat	act	ata	gtg	caa	gct	atc	tct	cga	3384
Val	Arg	Phe	Leu	Ser	Lys	Asp	Thr	Ile	Val	Gln	Ala	Ile	Ser	Arg	
1115						1120					1125				
tct	gcc	acg	aaa	aca	aga	aat	gct	cta	tcc	ggc	acg	tat	tca	gct	3429
Ser	Ala	Thr	Lys	Thr	Arg	Asn	Ala	Leu	Ser	Gly	Thr	Tyr	Ser	Ala	
1130						1135					1140				
ccc	caa	agg	tcc	gcc	agc	tct	gca	gct	ctt	ctg	gtt	ggg	gat	ccc	3474
Pro	Gln	Arg	Ser	Ala	Ser	Ser	Ala	Ala	Leu	Leu	Val	Gly	Asp	Pro	
1145						1150					1155				
tct	gca	atg	cgt	gat	aaa	gca	ggg	aac	ttt	gtg	ctt	cct	aga	gat	3519
Ser	Ala	Met	Arg	Asp	Lys	Ala	Gly	Asn	Phe	Val	Leu	Pro	Arg	Asp	
1160						1165					1170				
gat	gtc	atg	aaa	tta	agg	gat	cgt	ctc	agg	aac	gaa	gaa	aga	gtt	3564
Asp	Val	Met	Lys	Leu	Arg	Asp	Arg	Leu	Arg	Asn	Glu	Glu	Arg	Val	
1175						1180					1185				
gct	gga	tca	atc	ttc	tac	aaa	atg	caa	tgc	agg	aaa	gga	ttc	cgt	3609
Ala	Gly	Ser	Ile	Phe	Tyr	Lys	Met	Gln	Cys	Arg	Lys	Gly	Phe	Arg	
1190						1195					1200				
cat	gaa	cca	cct	aca	aat	gta	gat	tat	aga	aga	gac	atg	tgt	gcc	3654
His	Glu	Pro	Pro	Thr	Asn	Val	Asp	Tyr	Arg	Arg	Asp	Met	Cys	Ala	
1205						1210					1215				
cat	gca	aga	gtt	ttg	gca	ctg	gaa	gag	gca	att	gat	aca	gaa	tgg	3699
His	Ala	Arg	Val	Leu	Ala	Leu	Glu	Glu	Ala	Ile	Asp	Thr	Glu	Trp	
1220						1225					1230				
gtg	tat	atg	tgg	gac	aaa	ttt	ggc	ggc	tat	tta	cta	cta	ttg	tta	3744
Val	Tyr	Met	Trp	Asp	Lys	Phe	Gly	Gly	Tyr	Leu	Leu	Leu	Leu	Leu	
1235						1240					1245				
ggc	ttg	aca	gct	aag	gcg	gag	aga	gtt	cag	gat	gag	gta	cgg	ttg	3789
Gly	Leu	Thr	Ala	Lys	Ala	Glu	Arg	Val	Gln	Asp	Glu	Val	Arg	Leu	
1250						1255					1260				
cgg	ctc	ttc	tta	gat	agc	att	ggg	ttc	tcg	gat	tta	agt	gcc	aga	3834
Arg	Leu	Phe	Leu	Asp	Ser	Ile	Gly	Phe	Ser	Asp	Leu	Ser	Ala	Arg	
1265						1270					1275				
aaa	atc	agt	aaa	tgg	aag	cca	gag	gat	aga	aga	caa	ttc	gaa	att	3879
Lys	Ile	Ser	Lys	Trp	Lys	Pro	Glu	Asp	Arg	Arg	Gln	Phe	Glu	Ile	
1280						1285					1290				

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att Ile	caa Gln 1295	gag Glu	agt Ser	tat Tyr	ctg Leu	aga Arg 1300	gag Glu	aaa Lys	gag Glu	atg Met	gaa Glu 1305	gag Glu	gaa Glu	agc Ser	3924
ctt Leu	atg Met 1310	cag Gln	aga Arg	cgt Arg	gaa Glu 1315	gaa Glu 1315	gaa Glu	ggg Gly	aga Arg	ggt Gly	aaa Lys 1320	gaa Glu	aga Arg	agg Arg	3969
aaa Lys	gct Ala 1325	ctt Leu	ttg Leu	gag Glu	aag Lys	gaa Glu 1330	gag Glu	cgc Arg	aaa Lys	tgg Trp	aag Lys 1335	gaa Glu	att Ile	gaa Glu	4014
gcg Ala	tcc Ser 1340	ctt Leu	att Ile	cca Pro	tct Ser	att Ile 1345	cct Pro	aat Asn	gct Ala	ggt Gly	agc Ser 1350	agg Arg	gag Glu	gca Ala	4059
gca Ala	gcc Ala 1355	atg Met	gca Ala	gct Ala	gca Ala	ata Ile 1360	cgt Arg	gct Ala	gtt Val	ggg Gly	ggt Gly 1365	gat Asp	tct Ser	gtc Val	4104
ctt Leu	gag Glu 1370	gat Asp	tcc Ser	ttc Phe	gca Ala	aga Arg 1375	gag Glu	agg Arg	gtc Val	tcg Ser	ggt Gly 1380	att Ile	gca Ala	cgt Arg	4149
agg Arg	ata Ile 1385	cgc Arg	act Thr	gct Ala	caa Gln	cta Leu 1390	gaa Glu	cga Arg	cgt Arg	gca Ala	caa Gln 1395	cag Gln	act Thr	gga Gly	4194
ata Ile	tct Ser 1400	ggg Gly	gca Ala	gtt Val	tgt Cys	gtt Val 1405	ctt Leu	gat Asp	gat Asp	gaa Glu	cca Pro 1410	atg Met	ata Ile	agt Ser	4239
ggt Gly	aaa Lys 1415	cat His	tgc Cys	ggc Gly	caa Gln	atg Met 1420	gac Asp	tca Ser	agt Ser	gtc Val	tgt Cys 1425	caa Gln	agt Ser	cag Gln	4284
aag Lys	att Ile 1430	agc Ser	ttt Phe	tcc Ser	gtt Val	aca Thr 1435	gca Ala	atg Met	atc Ile	caa Gln	tcc Ser 1440	gat Asp	tct Ser	gga Gly	4329
cct Pro	gta Val 1445	tgt Cys	ctt Leu	ttt Phe	ggc Gly	act Thr 1450	gaa Glu	ttt Phe	caa Gln	aag Lys	aaa Lys 1455	gta Val	tgt Cys	tgg Trp	4374
gag Glu	att Ile 1460	ctg Leu	gtt Val	gct Ala	ggt Gly	tct Ser 1465	gag Glu	caa Gln	gga Gly	att Ile	gag Glu 1470	gct Ala	ggc Gly	caa Gln	4419
gtt Val	ggg Gly 1475	ctt Leu	agg Arg	ttg Leu	ata Ile	aca Thr 1480	aaa Lys	ggt Gly	gag Glu	agg Arg	cag Gln 1485	aca Thr	acc Thr	gtt Val	4464
gct Ala	aga Arg 1490	gag Glu	tgg Trp	tat Tyr	att Ile	ggt Gly 1495	gca Ala	acc Thr	agc Ser	ata Ile	act Thr 1500	gat Asp	gga Gly	agg Arg	4509
tgg Trp	cat His 1505	aca Thr	gtg Val	aca Thr	atc Ile	aca Thr 1510	att Ile	gat Asp	gct Ala	gat Asp	gcg Ala 1515	ggg Gly	gaa Glu	gct Ala	4554
act Thr	tgt Cys 1520	tac Tyr	ata Ile	gat Asp	ggt Gly	ggg Gly 1525	ttt Phe	gat Asp	ggc Gly	tac Tyr	cag Gln 1530	aat Asn	ggg Gly	tta Leu	4599

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cct Pro	cta Leu 1535	agt Ser	att Ile	ggc Gly	agt Ser	gcc Ala 1540	att Ile	tgg Trp	gaa Glu	caa Gln	gga Gly 1545	gct Ala	gaa Glu	gtt Val	4644
tgg Trp	ttg Leu 1550	ggt Gly	gtt Val	agg Arg	cca Pro	cct Pro 1555	ata Ile	gat Asp	gtt Val	gat Asp	gca Ala 1560	ttc Phe	ggg Gly	aga Arg	4689
tca Ser	gat Asp 1565	agt Ser	gat Asp	ggc Gly	gtc Val	gaa Glu 1570	tca Ser	aag Lys	atg Met	cat His	att Ile 1575	atg Met	gat Asp	gtt Val	4734
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cat His	gca Ala 1595	gcc Ala	att Ile	ggc Gly	atg Met	gct Ala 1600	gac Asp	tta Leu	gac Asp	atg Met	att Ile 1605	gat Asp	ttg Leu	tct Ser	4824
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tgg Trp	gat Asp 1625	agt Ser	gat Asp	cct Pro	gcc Ala	gat Asp 1630	gtt Val	gat Asp	ctc Leu	tat Tyr	gat Asp 1635	agg Arg	gat Asp	gac Asp	4914
gta Val	gat Asp 1640	tgg Trp	gat Asp	gga Gly	caa Gln	tat Tyr 1645	tcc Ser	agt Ser	ggg Gly	agg Arg	aaa Lys 1650	aga Arg	aga Arg	tca Ser	4959
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cgt Arg	tca Ser 1685	gtt Val	gag Glu	ttg Leu	gct Ala	gtc Val 1690	aaa Lys	gaa Glu	gct Ala	ctc Leu	tct Ser 1695	gca Ala	cga Arg	ggt Gly	5094
gat Asp	aag Lys 1700	caa Gln	ttt Phe	act Thr	gac Asp	cag Gln 1705	gaa Glu	ttt Phe	cct Pro	cca Pro	aat Asn 1710	gat Asp	cgc Arg	tct Ser	5139
tta Leu	ttt Phe 1715	gtg Val	gat Asp	aca Thr	caa Gln	aat Asn 1720	ccc Pro	cca Pro	tca Ser	aaa Lys	ttg Leu 1725	cag Gln	gtt Val	gtt Val	5184
tct Ser	gaa Glu 1730	tgg Trp	atg Met	aga Arg	cct Pro	gac Asp 1735	tcc Ser	att Ile	gtg Val	aaa Lys	gaa Glu 1740	aac Asn	ggt Gly	agt Ser	5229
gat Asp	tcc Ser 1745	cgt Arg	ccc Pro	tgc Cys	ctg Leu	ttc Phe 1750	tct Ser	ggg Gly	gat Asp	gca Ala	aat Asn 1755	cct Pro	tca Ser	gat Asp	5274
gtt Val	tgc Cys	cag Gln	ggg Gly	cgt Arg	ttg Leu	ggg Gly	gat Asp	tgt Cys	tgg Trp	ttc Phe	tta Leu	agc Ser	gcc Ala	gtt Val	5319

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gca gtt ttg aca gag gtt tca cga ata tct gaa gtg atc att act Ala Val Leu Thr Glu Val Ser Arg Ile Ser Glu Val Ile Ile Thr 1775 1780 1785			5364
cct gaa tac aac gag gaa ggg atc tac act gtt cgt ttt tgt att Pro Glu Tyr Asn Glu Glu Gly Ile Tyr Thr Val Arg Phe Cys Ile 1790 1795 1800			5409
cag ggt gag tgg gtt cct gtt gtt atc gat gac tgg att cca tgt Gln Gly Glu Trp Val Pro Val Val Ile Asp Asp Trp Ile Pro Cys 1805 1810 1815			5454
gaa tca cct ggt aaa cca gct ttt gct act agc aga aag ctc aat Glu Ser Pro Gly Lys Pro Ala Phe Ala Thr Ser Arg Lys Leu Asn 1820 1825 1830			5499
gaa ctc tgg gtc tcc atg gtg gag aaa gca tat gcc aag ctc cat Glu Leu Trp Val Ser Met Val Glu Lys Ala Tyr Ala Lys Leu His 1835 1840 1845			5544
ggt tct tat gag gca ctg gag ggg gga ctg gtt cag gat gct ctt Gly Ser Tyr Glu Ala Leu Glu Gly Gly Leu Val Gln Asp Ala Leu 1850 1855 1860			5589
gtc gac cta act gga gga gct ggt gag gag att gac ttg cgg agt Val Asp Leu Thr Gly Gly Ala Gly Gly Glu Glu Ile Asp Leu Arg Ser 1865 1870 1875			5634
gct caa gca caa ata gat ctt gca agt ggc aga ttg tgg tct caa Ala Gln Ala Gln Ile Asp Leu Ala Ser Gly Arg Leu Trp Ser Gln 1880 1885 1890			5679
ttg tta cgt ttt aaa caa gag ggg ttc tta ctt ggt gct gga agt Leu Leu Arg Phe Lys Gln Glu Gly Phe Leu Leu Gly Ala Gly Ser 1895 1900 1905			5724
cca tca gga tct gat gtt cat gta tct tcc agt ggc att gtg caa Pro Ser Gly Ser Asp Val His Val Ser Ser Ser Gly Ile Val Gln 1910 1915 1920			5769
ggg cat gct tac tcc gtc tta cag gtg aga gag gtt gat ggg cac Gly His Ala Tyr Ser Val Leu Gln Val Arg Glu Val Asp Gly His 1925 1930 1935			5814
aga ctt gtt cag att cga aat cca tgg gct aat gaa gtt gag tgg Arg Leu Val Gln Ile Arg Asn Pro Trp Ala Asn Glu Val Glu Trp 1940 1945 1950			5859
aat ggt ccc tgg tca gac tca tcc cca gag tgg act gat agg atg Asn Gly Pro Trp Ser Asp Ser Ser Pro Glu Trp Thr Asp Arg Met 1955 1960 1965			5904
aag cac aag ctg aag cat gtt cca cag tca aaa gaa ggt ata ttc Lys His Lys Leu Lys His Val Pro Gln Ser Lys Glu Gly Ile Phe 1970 1975 1980			5949
tgg atg tct tgg caa gat ttc cag att cat ttc aga tca ata tat Trp Met Ser Trp Gln Asp Phe Gln Ile His Phe Arg Ser Ile Tyr 1985 1990 1995			5994
gtg tgt cgg gtt tac ccc cgt gag atg cgc tac tct gta aat ggc			6039

Val	Cys	Arg	Val	Tyr	Pro	Arg	Glu	Met	Arg	Tyr	Ser	Val	Asn	Gly	
	2000					2005					2010				
caa	tgg	cga	ggt	tat	agt	gcc	ggt	ggc	tgc	caa	gat	tat	agc	tca	6084
Gln	Trp	Arg	Gly	Tyr	Ser	Ala	Gly	Gly	Cys	Gln	Asp	Tyr	Ser	Ser	
	2015					2020					2025				
tgg	cat	caa	aat	cca	caa	ttc	agg	ctg	agg	gca	act	ggt	tct	gat	6129
Trp	His	Gln	Asn	Pro	Gln	Phe	Arg	Leu	Arg	Ala	Thr	Gly	Ser	Asp	
	2030					2035					2040				
gca	tct	tta	cca	att	cat	gtg	ttc	atc	acc	tta	act	cag	ggc	gta	6174
Ala	Ser	Leu	Pro	Ile	His	Val	Phe	Ile	Thr	Leu	Thr	Gln	Gly	Val	
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Gly	Phe	Ser	Arg	Thr	Thr	Pro	Gly	Phe	Arg	Asn	Tyr	Gln	Ser	Ser	
	2060					2065					2070				
cat	gat	tca	cag	ttg	ttc	tat	atc	gga	ttg	agg	att	ctt	aaa	act	6264
His	Asp	Ser	Gln	Leu	Phe	Tyr	Ile	Gly	Leu	Arg	Ile	Leu	Lys	Thr	
	2075					2080					2085				
cgt	gga	cgt	cgt	gct	gct	tac	aac	ata	ttt	ctt	cat	gaa	tct	gtt	6309
Arg	Gly	Arg	Arg	Ala	Ala	Tyr	Asn	Ile	Phe	Leu	His	Glu	Ser	Val	
	2090					2095					2100				
ggt	gga	aca	gac	tat	gtg	aat	tcc	cgt	gag	att	tca	tgt	gaa	atg	6354
Gly	Gly	Thr	Asp	Tyr	Val	Asn	Ser	Arg	Glu	Ile	Ser	Cys	Glu	Met	
	2105					2110					2115				
gtt	ctt	gac	cct	gat	cct	aag	ggt	tat	act	att	gtc	cca	acc	acg	6399
Val	Leu	Asp	Pro	Asp	Pro	Lys	Gly	Tyr	Thr	Ile	Val	Pro	Thr	Thr	
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ata	cac	cca	ggg	gaa	gaa	gca	cct	ttt	gtc	ctt	tca	gtc	ttc	aca	6444
Ile	His	Pro	Gly	Glu	Glu	Ala	Pro	Phe	Val	Leu	Ser	Val	Phe	Thr	
	2135					2140					2145				
aaa	gca	tcc	att	gtt	ctt	gaa	gct	ttg	tag						6474
Lys	Ala	Ser	Ile	Val	Leu	Glu	Ala	Leu							
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<223> The 'Xaa' at location 105 stands for Ala, or Thr.

<220>

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<222> (516)..(516)

<223> The 'Xaa' at location 516 stands for Glu, Ala, Gln, or Pro.

<220>

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<222> (553)..(553)

<223> The 'Xaa' at location 553 stands for Leu.

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<222> (1659)..(1659)

<223> Xaa= any amino acid

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Val Asn Trp Arg Pro Trp Arg Leu Tyr Ser Trp Ile Phe Ala Arg Lys
35 40 45

Trp Pro Lys Val Leu Gln Gly Pro Gln Leu Asp Ile Leu Cys Gly Val
50 55 60

Leu Ser Leu Phe Ala Trp Ile Val Val Val Ser Pro Ile Ala Ile Leu
65 70 75 80

Ile Gly Trp Gly Ser Trp Leu Ile Val Ile Leu Asp Arg His Ile Ile
85 90 95

Gly Leu Ala Ile Ile Met Ala Gly Xaa Ala Leu Leu Leu Ala Phe Tyr
100 105 110

Ser Ile Met Leu Trp Trp Arg Thr Gln Trp Gln Ser Ser Arg Ala Val
115 120 125

Ala Leu Leu Leu Leu Leu Gly Val Ala Leu Leu Cys Ala Tyr Glu Leu
130 135 140

Cys Ala Val Tyr Val Thr Ala Gly Ala His Ala Ser Gln Gln Tyr Ser
145 150 155 160

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Pro Ser Gly Phe Phe Phe Gly Val Ser Ala Ile Ala Leu Ala Ile Asn
165 170 175

Met Leu Phe Ile Cys Arg Met Val Phe Asn Gly Asn Gly Leu Asp Val
180 185 190

Asp Glu Tyr Val Arg Arg Ala Tyr Lys Phe Ala Tyr Ser Asp Cys Ile
195 200 205

Glu Val Gly Pro Val Ala Cys Leu Pro Glu Pro Pro Asp Pro Asn Glu
210 215 220

Leu Tyr Pro Arg Gln Thr Ser Arg Ala Ser His Leu Gly Leu Leu Tyr
225 230 235 240

Leu Gly Ser Leu Val Val Leu Leu Ala Tyr Ser Val Leu Tyr Gly Leu
245 250 255

Thr Ala Arg Glu Ser Arg Trp Leu Gly Gly Ile Thr Ser Ala Ala Val
260 265 270

Ile Val Leu Asp Trp Asn Ile Gly Ala Cys Leu Tyr Gly Phe Lys Leu
275 280 285

Leu Gln Asn Arg Val Leu Ala Leu Phe Val Ala Gly Ile Ser Arg Leu
290 295 300

Phe Leu Ile Cys Phe Gly Ile His Tyr Trp Tyr Leu Gly His Cys Ile
305 310 315 320

Ser Tyr Ile Phe Val Ala Ser Val Leu Ser Gly Ala Ala Val Ser Arg
325 330 335

His Leu Ser Ile Thr Asp Pro Ser Ala Ala Arg Arg Asp Ala Leu Gln
340 345 350

Ser Thr Val Ile Arg Leu Arg Glu Gly Phe Arg Arg Lys Glu Gln Asn
355 360 365

Ser Ser Ser Ser Ser Asp Gly Cys Gly Ser Ser Ile Lys Arg Ser
370 375 380

Ser Ser Ile Asp Ala Gly His Thr Gly Cys Thr Asn Glu Ala Asn Arg
385 390 395 400

Thr Ala Glu Ser Cys Thr Ala Asp Asn Leu Thr Arg Thr Gly Ser Ser
Page 54

405

415

Gln Glu Gly Ile Asn Ser Asp Lys Ser Glu Glu Ser Gly Arg Pro Ser
420 425 430

Leu Gly Leu Arg Ser Ser Ser Cys Arg Ser Val Val Gln Glu Pro Glu
435 440 445

Ala Gly Thr Ser Tyr Phe Met Asp Lys Val Ser Asp Gln Asn Asn Thr
450 455 460

Leu Val Val Cys Ser Ser Ser Gly Leu Asp Ser Gln Gly Tyr Glu Ser
465 470 475 480

Ser Thr Ser Asn Ser Ala Asn Gln Gln Leu Leu Asp Met Asn Leu Ala
485 490 495

Leu Ala Phe Gln Asp Gln Leu Asn Asn Pro Arg Ile Ala Ser Ile Leu
500 505 510

Lys Lys Lys Xaa Lys Glu Gly Asp Leu Glu Leu Thr Asn Leu Leu Gln
515 520 525

Asp Lys Gly Leu Asp Pro Asn Phe Ala Val Met Leu Lys Glu Lys Asn
530 535 540

Leu Asp Pro Gly Lys Asn Leu Gly Xaa Thr Ile Leu Ala Leu Leu Gln
545 550 555 560

Arg Ser Ser Leu Asp Ala Asp Arg Asp His Arg Asp Asn Thr Asp Ile
565 570 575

Thr Ile Ile Asp Ser Asn Ser Val Asp Asn Thr Leu Pro Asn Gln Ile
580 585 590

Ser Leu Ser Glu Glu Leu Arg Leu Arg Gly Leu Glu Lys Trp Leu Lys
595 600 605

Leu Ser Arg Leu Leu Leu His His Val Ala Gly Thr Pro Glu Arg Ala
610 615 620

Trp Gly Leu Phe Ser Leu Val Phe Ile Leu Glu Thr Ile Ile Val Ala
625 630 635 640

Ile Phe Arg Pro Lys Thr Ile Thr Ile Ile Asn Ser Ser His Gln Gln
645 650 655

Phe Glu Phe Gly Phe Ser Val Leu Leu Leu Ser Pro Val Val Cys Ser
660 665 670

Ile Met Ala Phe Leu Arg Ser Leu Gln Val Glu Glu Met Ala Leu Thr
675 680 685

Ser Lys Ser Arg Lys Tyr Gly Phe Val Ala Trp Leu Leu Ser Thr Ser
690 695 700

Val Gly Leu Ser Leu Ser Phe Leu Ser Lys Ser Ser Val Leu Leu Gly
705 710 715 720

Ile Ser Leu Thr Val Pro Leu Met Ala Ala Cys Leu Ser Ile Ala Val
725 730 735

Pro Ile Trp Met His Asn Gly Tyr Gln Phe Trp Val Pro Gln Leu Ser
740 745 750

Cys Gly Asp Gln Ala Arg Asp Leu Arg Ser Pro Arg Ile Lys Gly Phe
755 760 765

Ile Leu Trp Ile Cys Val Val Leu Phe Ala Gly Ser Val Ile Ser Leu
770 775 780

Gly Ala Ile Ile Ser Ala Lys Pro Leu Asp Asp Leu Lys Tyr Lys Leu
785 790 795 800

Phe Ser Ala Arg Glu Asn Asn Val Thr Ser Pro Tyr Thr Ser Ser Val
805 810 815

Tyr Leu Gly Trp Ala Met Ser Ser Gly Ile Ala Leu Val Val Thr Ala
820 825 830

Ile Leu Pro Ile Val Ser Trp Phe Ala Thr Tyr Arg Phe Ser His Ser
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Ser Ala Val Cys Leu Met Ile Phe Ser Val Val Leu Val Ala Phe Cys
850 855 860

Gly Thr Ser Tyr Leu Glu Val Val Lys Ser Arg Asp Asp Gln Leu Pro
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Thr Lys Gly Asp Phe Leu Ala Ala Leu Leu Pro Leu Ala Cys Ile Pro
885 890 895

Ala Leu Leu Ser Leu Cys Cys Gly Met Val Lys Trp Lys Asp Asp Cys
900 905 910

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Trp Ile Leu Ser Arg Gly Val Tyr Val Phe Phe Ser Ile Gly Leu Leu
 915 920 925
 Leu Leu Phe Gly Ala Ile Ala Ala Val Ile Ala Val Lys Pro Trp Thr
 930 935 940
 Ile Gly Val Ser Phe Leu Leu Val Leu Phe Leu Met Val Val Thr Ile
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 Gly Val Ile His Leu Trp Ala Ser Asn Asn Phe Tyr Leu Thr Arg Lys
 965 970 975
 Gln Thr Ser Phe Val Cys Phe Leu Ala Leu Leu Leu Gly Leu Ala Ala
 980 985 990
 Phe Leu Leu Gly Trp His Gln Asp Lys Ala Phe Ala Gly Ala Ser Val
 995 1000 1005
 Gly Tyr Phe Thr Phe Leu Ser Leu Leu Ala Gly Arg Ala Leu Ala
 1010 1015 1020
 Val Leu Leu Ser Pro Pro Ile Val Val Tyr Ser Pro Arg Val Leu
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 Pro Val Tyr Val Tyr Asp Ala His Ala Asp Cys Gly Lys Asn Val
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 Ser Ala Ala Phe Leu Val Leu Tyr Gly Ile Ala Leu Ala Thr Glu
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 Gly Trp Gly Val Val Ala Ser Leu Ile Ile Tyr Pro Pro Phe Ala
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 Gly Ala Ala Val Ser Ala Ile Thr Leu Val Val Ala Phe Gly Phe
 1085 1090 1095
 Ala Val Ser Arg Pro Cys Leu Thr Leu Glu Met Met Glu Val Ala
 1100 1105 1110
 Val Arg Phe Leu Ser Lys Asp Thr Ile Val Gln Ala Ile Ser Arg
 1115 1120 1125
 Ser Ala Thr Lys Thr Arg Asn Ala Leu Ser Gly Thr Tyr Ser Ala
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 Pro Gln Arg Ser Ala Ser Ser Ala Ala Leu Leu Val Gly Asp Pro
 1145 1150 1155

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Ser Ala Met Arg Asp Lys Ala Gly Asn Phe Val Leu Pro Arg Asp
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Asp Val Met Lys Leu Arg Asp Arg Leu Arg Asn Glu Glu Arg Val
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Ala Gly Ser Ile Phe Tyr Lys Met Gln Cys Arg Lys Gly Phe Arg
1190 1195 1200

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His Ala Arg Val Leu Ala Leu Glu Glu Ala Ile Asp Thr Glu Trp
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Val Tyr Met Trp Asp Lys Phe Gly Gly Tyr Leu Leu Leu Leu Leu
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Gly Leu Thr Ala Lys Ala Glu Arg Val Gln Asp Glu Val Arg Leu
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Arg Leu Phe Leu Asp Ser Ile Gly Phe Ser Asp Leu Ser Ala Arg
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Lys Ile Ser Lys Trp Lys Pro Glu Asp Arg Arg Gln Phe Glu Ile
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Ile Gln Glu Ser Tyr Leu Arg Glu Lys Glu Met Glu Glu Glu Ser
1295 1300 1305

Leu Met Gln Arg Arg Glu Glu Glu Gly Arg Gly Lys Glu Arg Arg
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Lys Ala Leu Leu Glu Lys Glu Glu Arg Lys Trp Lys Glu Ile Glu
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Ala Ser Leu Ile Pro Ser Ile Pro Asn Ala Gly Ser Arg Glu Ala
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Ala Ala Met Ala Ala Ala Ile Arg Ala Val Gly Gly Asp Ser Val
1355 1360 1365

Leu Glu Asp Ser Phe Ala Arg Glu Arg Val Ser Gly Ile Ala Arg
1370 1375 1380

Arg Ile Arg Thr Ala Gln Leu Glu Arg Arg Ala Gln Gln Thr Gly
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1385

1390

1395

Ile Ser Gly Ala Val Cys Val Leu Asp Asp Glu Pro Met Ile Ser
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 Gly Lys His Cys Gly Gln Met Asp Ser Ser Val Cys Gln Ser Gln
 1415 1420 1425
 Lys Ile Ser Phe Ser Val Thr Ala Met Ile Gln Ser Asp Ser Gly
 1430 1435 1440
 Pro Val Cys Leu Phe Gly Thr Glu Phe Gln Lys Lys Val Cys Trp
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 Glu Ile Leu Val Ala Gly Ser Glu Gln Gly Ile Glu Ala Gly Gln
 1460 1465 1470
 Val Gly Leu Arg Leu Ile Thr Lys Gly Glu Arg Gln Thr Thr Val
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 Ala Arg Glu Trp Tyr Ile Gly Ala Thr Ser Ile Thr Asp Gly Arg
 1490 1495 1500
 Trp His Thr Val Thr Ile Thr Ile Asp Ala Asp Ala Gly Glu Ala
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 Thr Cys Tyr Ile Asp Gly Gly Phe Asp Gly Tyr Gln Asn Gly Leu
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 His Ala Ala Ile Gly Met Ala Asp Leu Asp Met Ile Asp Leu Ser
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Trp Asp Ser Asp Pro Ala Asp Val Asp Leu Tyr Asp Arg Asp Asp
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 Gly Arg Asp Phe Val Met Ser Val Asp Ser Phe Ala Arg Arg His
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 Arg Ser Val Glu Leu Ala Val Lys Glu Ala Leu Ser Ala Arg Gly
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 Ser Glu Trp Met Arg Pro Asp Ser Ile Val Lys Glu Asn Gly Ser
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 Asp Ser Arg Pro Cys Leu Phe Ser Gly Asp Ala Asn Pro Ser Asp
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 Ala Val Leu Thr Glu Val Ser Arg Ile Ser Glu Val Ile Ile Thr
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 Pro Glu Tyr Asn Glu Glu Gly Ile Tyr Thr Val Arg Phe Cys Ile
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 Glu Ser Pro Gly Lys Pro Ala Phe Ala Thr Ser Arg Lys Leu Asn
 1820 1825 1830
 Glu Leu Trp Val Ser Met Val Glu Lys Ala Tyr Ala Lys Leu His
 1835 1840 1845
 Gly Ser Tyr Glu Ala Leu Glu Gly Gly Leu Val Gln Asp Ala Leu
 1850 1855 1860

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Val Asp Leu Thr Gly Gly Ala Gly Glu Glu Ile Asp Leu Arg Ser
 1865 1870 1875
 Ala Gln Ala Gln Ile Asp Leu Ala Ser Gly Arg Leu Trp Ser Gln
 1880 1885 1890
 Leu Leu Arg Phe Lys Gln Glu Gly Phe Leu Leu Gly Ala Gly Ser
 1895 1900 1905
 Pro Ser Gly Ser Asp Val His Val Ser Ser Ser Gly Ile Val Gln
 1910 1915 1920
 Gly His Ala Tyr Ser Val Leu Gln Val Arg Glu Val Asp Gly His
 1925 1930 1935
 Arg Leu Val Gln Ile Arg Asn Pro Trp Ala Asn Glu Val Glu Trp
 1940 1945 1950
 Asn Gly Pro Trp Ser Asp Ser Ser Pro Glu Trp Thr Asp Arg Met
 1955 1960 1965
 Lys His Lys Leu Lys His Val Pro Gln Ser Lys Glu Gly Ile Phe
 1970 1975 1980
 Trp Met Ser Trp Gln Asp Phe Gln Ile His Phe Arg Ser Ile Tyr
 1985 1990 1995
 Val Cys Arg Val Tyr Pro Arg Glu Met Arg Tyr Ser Val Asn Gly
 2000 2005 2010
 Gln Trp Arg Gly Tyr Ser Ala Gly Gly Cys Gln Asp Tyr Ser Ser
 2015 2020 2025
 Trp His Gln Asn Pro Gln Phe Arg Leu Arg Ala Thr Gly Ser Asp
 2030 2035 2040
 Ala Ser Leu Pro Ile His Val Phe Ile Thr Leu Thr Gln Gly Val
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Gly Gly Thr Asp Tyr Val Asn Ser Arg Glu Ile Ser Cys Glu Met
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Lys Ala Ser Ile Val Leu Glu Ala Leu
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ctc gat ctc tca ctc aaa ctc atc tct tct ttc acg aat cga cct ttc 192
 Leu Asp Leu Ser Leu Lys Leu Ile Ser Ser Phe Thr Asn Arg Pro Phe
 50 55 60

gta gct aca cca cca tta cca gaa ccc aaa gtt gag aag aag cat cat 240
 Val Ala Thr Pro Pro Leu Pro Glu Pro Lys Val Glu Lys Lys His His
 65 70 75 80

ccg att gtt aaa tta gga acc caa ctg caa caa tta cat ggg cat gat 288
 Pro Ile Val Lys Leu Gly Thr Gln Leu Gln Gln Leu His Gly His Asp
 85 90 95

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tca aaa tcg atg ctt gtt gat tcg aat cag aga gat gct gaa gct gat Ser Lys Ser Met Leu Val Asp Ser Asn Gln Arg Asp Ala Glu Ala Asp 100 105 110	336
ggg tct agt ggg agt cct atg gcg ctt gtt aga gct atg gtt gct gag Gly Ser Ser Gly Ser Pro Met Ala Leu Val Arg Ala Met Val Ala Glu 115 120 125	384
tgt ttg ctt caa cgt gta ccg ttt tct cct acg gat tct tct act gtg Cys Leu Leu Gln Arg Val Pro Phe Ser Pro Thr Asp Ser Ser Thr Val 130 135 140	432
ctt agg aag ctt gag aat gac cag aat gct aga ccg gcg gag aag gcg Leu Arg Lys Leu Glu Asn Asp Gln Asn Ala Arg Pro Ala Glu Lys Ala 145 150 155 160	480
gcg tta cga gat tta ggc ggt gaa tgt gga ccg att ctt gcg gtg gag Ala Leu Arg Asp Leu Gly Gly Glu Cys Gly Pro Ile Leu Ala Val Glu 165 170 175	528
acc gca ctt aaa tcg atg gcg gaa gag aat ggt tct gtg gaa ttg gaa Thr Ala Leu Lys Ser Met Ala Glu Glu Asn Gly Ser Val Glu Leu Glu 180 185 190	576
gag ttt gag gtt agt ggg aag cct agg atc atg gtt tta gct ata gat Glu Phe Glu Val Ser Gly Lys Pro Arg Ile Met Val Leu Ala Ile Asp 195 200 205	624
aga act aga ttg ctt aaa gag tta cca gag agt ttc caa ggg aat aac Arg Thr Arg Leu Leu Lys Glu Leu Pro Glu Ser Phe Gln Gly Asn Asn 210 215 220	672
gaa tcg aat cgg gtt gtc gaa acg cct aat tca att gag aat gct act Glu Ser Asn Arg Val Val Glu Thr Pro Asn Ser Ile Glu Asn Ala Thr 225 230 235 240	720
gtt tct ggt ggc ggg ttt ggt gtt tcc ggg tcg ggt aat ttc ccg aga Val Ser Gly Gly Gly Phe Gly Val Ser Gly Ser Gly Asn Phe Pro Arg 245 250 255	768
cct gag atg tgg gga ggt gat cct aat atg ggg ttt agg cca atg atg Pro Glu Met Trp Gly Gly Asp Pro Asn Met Gly Phe Arg Pro Met Met 260 265 270	816
aat gca cca aga gga atg caa atg atg gga atg cat cat cca atg ggg Asn Ala Pro Arg Gly Met Gln Met Met Gly Met His His Pro Met Gly 275 280 285	864
ata atg ggt aga cca cca cca ttt cct ttg cct ttg ccg ttg cct gta Ile Met Gly Arg Pro Pro Pro Phe Pro Leu Pro Leu Pro Leu Pro Val 290 295 300	912
ccg tcg aat cag aag ctt aga agt gag gaa gag gat ttg aaa gat gtt Pro Ser Asn Gln Lys Leu Arg Ser Glu Glu Glu Asp Leu Lys Asp Val 305 310 315 320	960
gag gct ctt ttg agt aag aag tct ttt aag gag aag caa cag tct agg Glu Ala Leu Leu Ser Lys Lys Ser Phe Lys Glu Lys Gln Gln Ser Arg 325 330 335	1008
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gcc gct act gct gct aag ttt aaa agc aaa gga gga tca cag gtt aag Ala Ala Thr Ala Ala Lys Phe Lys Ser Lys Gly Gly Ser Gln Val Lys 355 360 365	1104
tat tac tgt agg tat tta act aaa gag gat tgc cgt ctt cag tct ggt Tyr Tyr Cys Arg Tyr Leu Thr Lys Glu Asp Cys Arg Leu Gln Ser Gly 370 375 380	1152
tct cac ata gcc tgc aac aag aga cat ttc cgt cga cta atc gct tca Ser His Ile Ala Cys Asn Lys Arg His Phe Arg Arg Leu Ile Ala Ser 385 390 395 400	1200
cat act gac gtt agc cta gga gat tgt tcc ttt ctc gat act tgt cgt His Thr Asp Val Ser Leu Gly Asp Cys Ser Phe Leu Asp Thr Cys Arg 405 410 415	1248
cac atg aag act tgc aaa tac gtg cat tac gag ctc gac atg gct gac His Met Lys Thr Cys Lys Tyr Val His Tyr Glu Leu Asp Met Ala Asp 420 425 430	1296
gct atg atg gct ggt cca gat aag gca ttg aag cct cta cgt gct gat Ala Met Met Ala Gly Pro Asp Lys Ala Leu Lys Pro Leu Arg Ala Asp 435 440 445	1344
tac tgt tct gaa gct gaa ctt ggt gag gca caa tgg att aac tgt gac Tyr Cys Ser Glu Ala Glu Leu Gly Glu Ala Gln Trp Ile Asn Cys Asp 450 455 460	1392
atc cgt tct ttt cga atg gac att ttg gga acc ttt gga gtt gtt atg Ile Arg Ser Phe Arg Met Asp Ile Leu Gly Thr Phe Gly Val Val Met 465 470 475 480	1440
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gta aag aca aat caa ctt caa cgt att att cga aca gga aga aca ggt Val Lys Thr Asn Gln Leu Gln Arg Ile Ile Arg Thr Gly Arg Thr Gly 545 550 555 560	1680
cac tgg ctc aac cat agc aaa gag cat tgt ctg gtt gga atc aaa gga His Trp Leu Asn His Ser Lys Glu His Cys Leu Val Gly Ile Lys Gly 565 570 575	1728
aat cca gaa gtg aac aga aac atc gac aca gat gtg att gtc gca gag Asn Pro Glu Val Asn Arg Asn Ile Asp Thr Asp Val Ile Val Ala Glu 580 585 590	1776
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595

600

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 Asn Ala His Ala Gly Trp Leu Ser Leu Gly Asn Gln Leu Asn Gly Val
 625 630 635 640

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 Arg Leu Ile Asn Glu Gly Leu Arg Ala Arg Phe Lys Ala Ser Tyr Pro
 645 650 655

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 35 40 45

Leu Asp Leu Ser Leu Lys Leu Ile Ser Ser Phe Thr Asn Arg Pro Phe
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Val Ala Thr Pro Pro Leu Pro Glu Pro Lys Val Glu Lys Lys His His
 65 70 75 80

Pro Ile Val Lys Leu Gly Thr Gln Leu Gln Gln Leu His Gly His Asp
 85 90 95

Ser Lys Ser Met Leu Val Asp Ser Asn Gln Arg Asp Ala Glu Ala Asp
 100 105 110

Gly Ser Ser Gly Ser Pro Met Ala Leu Val Arg Ala Met Val Ala Glu
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Cys Leu Leu Gln Arg Val Pro Phe Ser Pro Thr Asp Ser Ser Thr Val
 130 135 140

Leu Arg Lys Leu Glu Asn Asp Gln Asn Ala Arg Pro Ala Glu Lys Ala
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Ala Leu Arg Asp Leu Gly Gly Glu Cys Gly Pro Ile Leu Ala Val Glu
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Thr Ala Leu Lys Ser Met Ala Glu Glu Asn Gly Ser Val Glu Leu Glu
 180 185 190

Glu Phe Glu Val Ser Gly Lys Pro Arg Ile Met Val Leu Ala Ile Asp
 195 200 205

Arg Thr Arg Leu Leu Lys Glu Leu Pro Glu Ser Phe Gln Gly Asn Asn
 210 215 220

Glu Ser Asn Arg Val Val Glu Thr Pro Asn Ser Ile Glu Asn Ala Thr
 225 230 235 240

Val Ser Gly Gly Gly Phe Gly Val Ser Gly Ser Gly Asn Phe Pro Arg
 245 250 255

Pro Glu Met Trp Gly Gly Asp Pro Asn Met Gly Phe Arg Pro Met Met
 260 265 270

Asn Ala Pro Arg Gly Met Gln Met Met Gly Met His His Pro Met Gly
 275 280 285

Ile Met Gly Arg Pro Pro Pro Phe Pro Leu Pro Leu Pro Leu Pro Val
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Pro Ser Asn Gln Lys Leu Arg Ser Glu Glu Glu Asp Leu Lys Asp Val
 305 310 315 320

Glu Ala Leu Leu Ser Lys Lys Ser Phe Lys Glu Lys Gln Gln Ser Arg
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Thr Gly Glu Glu Leu Leu Asp Leu Ile His Arg Pro Thr Ala Lys Glu
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Ala Ala Thr Ala Ala Lys Phe Lys Ser Lys Gly Gly Ser Gln Val Lys
 355 360 365

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Tyr Tyr Cys Arg Tyr Leu Thr Lys Glu Asp Cys Arg Leu Gln Ser Gly
 370 375 380

Ser His Ile Ala Cys Asn Lys Arg His Phe Arg Arg Leu Ile Ala Ser
 385 390 395 400

His Thr Asp Val Ser Leu Gly Asp Cys Ser Phe Leu Asp Thr Cys Arg
 405 410 415

His Met Lys Thr Cys Lys Tyr Val His Tyr Glu Leu Asp Met Ala Asp
 420 425 430

Ala Met Met Ala Gly Pro Asp Lys Ala Leu Lys Pro Leu Arg Ala Asp
 435 440 445

Tyr Cys Ser Glu Ala Glu Leu Gly Glu Ala Gln Trp Ile Asn Cys Asp
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Ile Arg Ser Phe Arg Met Asp Ile Leu Gly Thr Phe Gly Val Val Met
 465 470 475 480

Ala Asp Pro Pro Trp Asp Ile His Met Glu Leu Pro Tyr Gly Thr Met
 485 490 495

Ala Asp Asp Glu Met Arg Thr Leu Asn Val Pro Ser Leu Gln Thr Asp
 500 505 510

Gly Leu Ile Phe Leu Trp Val Thr Gly Arg Ala Met Glu Leu Gly Arg
 515 520 525

Glu Cys Leu Glu Leu Trp Gly Tyr Lys Arg Val Glu Glu Ile Ile Trp
 530 535 540

Val Lys Thr Asn Gln Leu Gln Arg Ile Ile Arg Thr Gly Arg Thr Gly
 545 550 555 560

His Trp Leu Asn His Ser Lys Glu His Cys Leu Val Gly Ile Lys Gly
 565 570 575

Asn Pro Glu Val Asn Arg Asn Ile Asp Thr Asp Val Ile Val Ala Glu
 580 585 590

Val Arg Glu Thr Ser Arg Lys Pro Asp Glu Met Tyr Ala Met Leu Glu
 595 600 605

Arg Ile Met Pro Arg Ala Arg Lys Leu Glu Leu Phe Ala Arg Met His
 610 615 620

Asn Ala His Ala Gly Trp Leu Ser Leu Gly Asn Gln Leu Asn Gly Val
 625 630 635 640

Arg Leu Ile Asn Glu Gly Leu Arg Ala Arg Phe Lys Ala Ser Tyr Pro
 645 650 655

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Pro	Glu	Phe	Glu	Pro	Asp	Met	Glu	Lys	Ile	Lys	Arg	Arg	Leu	Leu	Lys	
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tac	ggt	gtt	gat	cca	acc	ccc	aaa	atc	ctg	aac	aat	ctc	cga	aag	aaa	144
Tyr	Gly	Val	Asp	Pro	Thr	Pro	Lys	Ile	Leu	Asn	Asn	Leu	Arg	Lys	Lys	
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Ala	Glu	Val	Tyr	Thr	Glu	Ala	Gln	Lys	Gln	Ser	Met	Glu	Glu	Glu	Ala	
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cgt	ttt	caa	acc	ctt	aga	cgg	gaa	tac	aag	caa	ttc	acg	agg	tca	att	288
Arg	Phe	Gln	Thr	Leu	Arg	Arg	Glu	Tyr	Lys	Gln	Phe	Thr	Arg	Ser	Ile	
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aga Arg	gaa Glu 130	gag Glu	gtt Val	agt Ser	gct Ala	ggt Gly 135	gaa Glu	ttg Leu	aag Lys	aaa Lys	gag Glu 140	aat Asn	cta Leu	aaa Lys	gag Glu	432
ttg Leu 145	aag Lys	aag Lys	ata Ile	ctt Leu	gag Glu 150	aag Lys	gat Asp	ctt Leu	cgt Arg	tgg Trp 155	gtt Val	cta Leu	gac Asp	gac Asp	gac Asp 160	480
gtt Val	gat Asp	gtg Val	gaa Glu 165	gaa Glu	ttt Phe	gat Asp	ttg Leu	gac Asp 170	aaa Lys	gaa Glu	ttt Phe	gat Asp	cct Pro	gcg Ala 175	aaa Lys	528
cgg Arg	tgg Trp	cgt Arg	aac Asn 180	gaa Glu	gga Gly	gaa Glu	gca Ala	gtc Val 185	aga Arg	gtt Val	ctc Leu	gtt Val	gac Asp 190	aga Arg	ttg Leu	576
agt Ser	ggt Gly	aga Arg 195	gaa Glu	atc Ile	aat Asn	gag Glu	aag Lys 200	cat His	tgg Trp	aag Lys	ttt Phe	gtg Val 205	aga Arg	atg Met	atg Met	624
aat Asn 210	caa Gln	tca Ser	ggg Gly	ctt Leu	cag Gln	ttc Phe 215	act Thr	gaa Glu	gat Asp	cag Gln	atg Met 220	ctt Leu	aag Lys	atc Ile	gtt Val	672
gat Asp 225	cga Arg	ttg Leu	gga Gly	cgt Arg	aaa Lys 230	cag Gln	agc Ser	tgg Trp	aaa Lys	caa Gln 235	gct Ala	tca Ser	gct Ala	gtt Val	gtt Val 240	720
cat His	tgg Trp	gtg Val	tat Tyr	tct Ser 245	gat Asp	aaa Lys	aag Lys	cgt Arg	aaa Lys 250	cat His	ctt Leu	agg Arg	agc Ser	aga Arg 255	ttt Phe	768
gtt Val	tac Tyr	acc Thr	aag Lys 260	ctt Leu	ttg Leu	tcc Ser	gtt Val	ctt Leu 265	ggg Gly	ttt Phe	gcg Ala	agg Arg	agg Arg 270	cca Pro	cag Gln	816
gaa Glu	gct Ala 275	ctt Leu	cag Gln	ata Ile	ttc Phe	aat Asn	cag Gln 280	atg Met	ctt Leu	ggt Gly	gat Asp	cgc Arg 285	cag Gln	tta Leu	tat Tyr	864
cct Pro 290	gat Asp	atg Met	gcg Ala	gcg Ala	tac Tyr	cac His 295	tgt Cys	att Ile	gct Ala	gta Val	aca Thr 300	ctt Leu	ggg Gly	caa Gln	gcg Ala	912
ggt Gly 305	tta Leu	ttg Leu	aag Lys	gag Glu	ttg Leu 310	ctt Leu	aaa Lys	gta Val	atc Ile	gag Glu 315	cgt Arg	atg Met	agg Arg	cag Gln	aaa Lys 320	960
ccg Pro	act Thr	aaa Lys	cta Leu	act Thr 325	aag Lys	aat Asn	ttg Leu	cgg Arg	caa Gln 330	aag Lys	aac Asn	tgg Trp	gat Asp	cct Pro 335	gtg Val	1008
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Val	Met	Leu	Glu	Ser	Gly	Lys	Phe	Asp	Arg	Val	His	Asp	Phe	Phe	Arg	
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Leu	Val	Arg	Ala	Leu	Trp	Arg	Glu	Gly	Lys	Ile	Glu	Glu	Ala	Val	Glu	
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Ala	Val	Arg	Asp	Met	Glu	Gln	Lys	Gly	Val	Ile	Gly	Thr	Gly	Ser	Val	
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Tyr	Tyr	Glu	Leu	Ala	Cys	Cys	Leu	Cys	Asn	Asn	Gly	Arg	Trp	Cys	Asp	
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Leu	Glu	Ile	Thr	Phe	Thr	Gly	Leu	Ile	Ala	Ala	Ser	Leu	Asn	Gly	Gly	
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cat	ggt	gat	gat	tgc	atg	gct	ata	ttc	caa	tat	atg	aaa	gat	aaa	tgt	1536
His	Val	Asp	Asp	Cys	Met	Ala	Ile	Phe	Gln	Tyr	Met	Lys	Asp	Lys	Cys	
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Asp	Pro	Asn	Ile	Gly	Thr	Ala	Asn	Met	Met	Leu	Lys	Val	Tyr	Gly	Arg	
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Asn	Asp	Met	Phe	Ser	Glu	Ala	Lys	Glu	Leu	Phe	Glu	Glu	Ile	Val	Ser	
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Arg	Lys	Glu	Thr	His	Leu	Val	Pro	Asn	Glu	Tyr	Thr	Tyr	Ser	Phe	Met	
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Leu	Glu	Ala	Ser	Ala	Arg	Ser	Leu	Gln	Trp	Glu	Tyr	Phe	Glu	His	Val	
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tat	caa	acg	atg	ggt	ctt	tct	ggt	tac	caa	atg	gat	caa	aca	aaa	cat	1776
Tyr	Gln	Thr	Met	Val	Leu	Ser	Gly	Tyr	Gln	Met	Asp	Gln	Thr	Lys	His	
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gca	tca	atg	ctg	ata	gaa	gca	tca	aga	gcc	ggg	aag	tgg	agt	ctt	cta	1824
Ala	Ser	Met	Leu	Ile	Glu	Ala	Ser	Arg	Ala	Gly	Lys	Trp	Ser	Leu	Leu	

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ctt act caa gat aat ctt cat aag ctc tcg gat cat ctc att gag tgt Leu Thr Gln Asp Asn Leu His Lys Leu Ser Asp His Leu Ile Glu Cys 675 680 685			2064
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tct cga tgt ggg tct tct tct tct tca gca caa cca ttg tta gcc gta Ser Arg Cys Gly Ser Ser Ser Ser Ser Ala Gln Pro Leu Leu Ala Val 705 710 715 720			2160
gat gta aca act caa agt cag ggc gaa aaa ccg gag gaa gat ttg ctt Asp Val Thr Thr Gln Ser Gln Gly Glu Lys Pro Glu Glu Asp Leu Leu 725 730 735			2208
ctg caa gat aca aca atg gaa gat gat aat agt gct aat ggt gaa gct Leu Gln Asp Thr Thr Met Glu Asp Asp Asn Ser Ala Asn Gly Glu Ala 740 745 750			2256
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gag att gat gat gat gaa gaa tct agc gac tct gat tca ctt tca gtt Glu Ile Asp Asp Asp Glu Glu Ser Ser Asp Ser Asp Ser Leu Ser Val 770 775 780			2352
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 Glu Ile Gln Lys His Asn Arg Arg Thr Lys Arg Glu Thr Glu Ser Glu
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 Ala Glu Val Tyr Thr Glu Ala Gln Lys Gln Ser Met Glu Glu Glu Ala
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 Arg Phe Gln Thr Leu Arg Arg Glu Tyr Lys Gln Phe Thr Arg Ser Ile
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 Ser Gly Lys Arg Gly Gly Asp Val Gly Leu Met Val Gly Asn Pro Trp
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 Glu Gly Ile Glu Arg Val Lys Leu Lys Glu Leu Val Ser Gly Val Arg
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 Arg Glu Glu Val Ser Ala Gly Glu Leu Lys Lys Glu Asn Leu Lys Glu
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 Leu Lys Lys Ile Leu Glu Lys Asp Leu Arg Trp Val Leu Asp Asp Asp
 145 150 155 160
 Val Asp Val Glu Glu Phe Asp Leu Asp Lys Glu Phe Asp Pro Ala Lys
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 Arg Trp Arg Asn Glu Gly Glu Ala Val Arg Val Leu Val Asp Arg Leu
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 Ser Gly Arg Glu Ile Asn Glu Lys His Trp Lys Phe Val Arg Met Met
 195 200 205
 Asn Gln Ser Gly Leu Gln Phe Thr Glu Asp Gln Met Leu Lys Ile Val
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 Asp Arg Leu Gly Arg Lys Gln Ser Trp Lys Gln Ala Ser Ala Val Val
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 His Trp Val Tyr Ser Asp Lys Lys Arg Lys His Leu Arg Ser Arg Phe
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Val Tyr Thr Lys₂₆₀ Leu Leu Ser Val Leu₂₆₅ Gly Phe Ala Arg Arg₂₇₀ Pro Gln

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Pro Asp₂₉₀ Met Ala Ala Tyr His₂₉₅ Cys Ile Ala Val Thr₃₀₀ Leu Gly Gln Ala

Gly₃₀₅ Leu Leu Lys Glu₃₁₀ Leu Leu Lys Val Ile Glu₃₁₅ Arg Met Arg Gln Lys₃₂₀

Pro Thr Lys Leu Thr₃₂₅ Lys Asn Leu Arg Gln₃₃₀ Lys Asn Trp Asp Pro₃₃₅ Val

Leu Glu Pro Asp₃₄₀ Leu Val Val Tyr Asn₃₄₅ Ala Ile Leu Asn Ala Cys Val₃₅₀

Pro Thr Leu₃₅₅ Gln Trp Lys Ala Val₃₆₀ Ser Trp Val Phe Val₃₆₅ Glu Leu Arg

Lys Asn₃₇₀ Gly Leu Arg Pro Asn₃₇₅ Gly Ala Thr Tyr Gly₃₈₀ Leu Ala Met Glu

Val₃₈₅ Met Leu Glu Ser Gly₃₉₀ Lys Phe Asp Arg Val₃₉₅ His Asp Phe Phe Arg₄₀₀

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Ala Val Arg₄₃₅ Asp Met Glu Gln Lys₄₄₀ Gly Val Ile Gly Thr₄₄₅ Gly Ser Val

Tyr Tyr₄₅₀ Glu Leu Ala Cys Cys₄₅₅ Leu Cys Asn Asn Gly₄₆₀ Arg Trp Cys Asp

Ala Met Leu Glu Val₄₆₅ Gly Arg Met Lys Arg Leu₄₇₅ Glu Asn Cys Arg Pro₄₈₀

Leu Glu Ile Thr₄₈₅ Phe Thr Gly Leu Ile Ala₄₉₀ Ala Ser Leu Asn Gly₄₉₅ Gly

His Val Asp Asp₅₀₀ Cys Met Ala Ile Phe₅₀₅ Gln Tyr Met Lys Asp₅₁₀ Lys Cys

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Arg Lys Glu Thr His Leu Val Pro Asn Glu Tyr Thr Tyr Ser Phe Met
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Tyr Gln Thr Met Val Leu Ser Gly Tyr Gln Met Asp Gln Thr Lys His
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Gln Arg Ala Ile Thr Leu Ile Asn Thr Val Ala Leu Ala Ser Phe Gln
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Ile Ser Glu Glu Glu Trp Thr Asp Leu Phe Glu Glu His Gln Asp Trp
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Leu Thr Gln Asp Asn Leu His Lys Leu Ser Asp His Leu Ile Glu Cys
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Asp Tyr Val Ser Glu Pro Thr Val Ser Asn Leu Ser Lys Ser Leu Lys
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Asp Val Thr Thr Gln Ser Gln Gly Glu Lys Pro Glu Glu Asp Leu Leu
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Leu Gln Asp Thr Thr Met Glu Asp Asp Asn Ser Ala Asn Gly Glu Ala
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Trp Glu Phe Thr Glu Thr Glu Leu Glu Thr Leu Gly Leu Glu Glu Leu
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755

760

765

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 Trp Thr Glu Glu Val Glu Tyr Leu Asp Glu Ser Gly Ser Val Leu His
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 115 120 125

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485

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Tyr Tyr Gly Val Val Pro Arg Arg Ile Lys Leu Val Thr Gly Pro Thr
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960			

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cct Pro	gaa Glu 610	gca Ala	tta Leu	gtt Val	gac Asp	aag Lys 615	gaa Glu	aaa Lys	gaa Glu	aaa Lys	tac Tyr 620	tgg Trp	agc Ser	cca Pro	gta Val	1872
gat Asp 625	gta Val	tat Tyr	gtt Val	ggt Gly 630	ggt Gly	gct Ala	gag Glu	cat His	gct Ala	gtt Val 635	tta Leu	cat His	tta Leu	cta Leu	tac Tyr 640	1920
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aaa Lys	gaa Glu	cca Pro	ttc Phe 660	aaa Lys	tgt Cys	gtc Val	ata Ile	aat Asn 665	caa Gln	gga Gly	atc Ile	atc Ile	ctt Leu 670	ggg Gly	gaa Glu	2016
gtc Val	caa Gln	tat Tyr 675	aca Thr	gct Ala	tgg Trp	aaa Lys	gat Asp 680	caa Gln	gaa Glu	gga Gly	aat Asn	tat Tyr 685	gta Val	tct Ser	gca Ala	2064
gat Asp	act Thr 690	gaa Glu	gaa Glu	cgg Arg	tta Leu	aat Asn 695	gaa Glu	cat His	caa Gln	caa Gln	gtg Val 700	aca Thr	atc Ile	ccg Pro	gaa Glu	2112
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cta Leu	cgt Arg	ttg Leu 755	tat Tyr	gag Glu	atg Met	ttc Phe	atg Met 760	gga Gly	cca Pro	ttt Phe	agg Arg	gac Asp 765	tca Ser	aaa Lys	act Thr	2304
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 Phe Asn Thr Gly Ile Ser Gly Met Met Glu Phe Val Asn Ala Ala Tyr 835 840 845
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 Lys Trp Asn Asn Gln Pro Arg Gly Ile Ile Glu Pro Phe Val Leu Leu 850 855 860
 ctc tca cct tac gcg cct cac atg gct gaa gag ctt tgg tcg cgg tta 2640
 Leu Ser Pro Tyr Ala Pro His Met Ala Glu Glu Leu Trp Ser Arg Leu 865 870 875 880
 ggc cat cca aat tct ctg gcc tat gaa agc ttc cct aag gca aac ccg 2688
 Gly His Pro Asn Ser Leu Ala Tyr Glu Ser Phe Pro Lys Ala Asn Pro 885 890 895
 gat tac tta aag aac aca act att gtt ctt cca gtt cag ata aac ggc 2736
 Asp Tyr Leu Lys Asn Thr Thr Ile Val Leu Pro Val Gln Ile Asn Gly 900 905 910
 aag aca aga ggc acc ata gag gtt gaa gaa gga tgc tct gaa gat gat 2784
 Lys Thr Arg Gly Thr Ile Glu Val Glu Glu Gly Cys Ser Glu Asp Asp 915 920 925
 gct ttt gtt cta gct tca cag gac gac aaa ctc agg aaa tat cta gat 2832
 Ala Phe Val Leu Ala Ser Gln Asp Asp Lys Leu Arg Lys Tyr Leu Asp 930 935 940
 gga caa tca atc aag aag cga atc tat gtg cct ggg aag atc ctc aac 2880
 Gly Gln Ser Ile Lys Lys Arg Ile Tyr Val Pro Gly Lys Ile Leu Asn 945 950 955 960
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<213> Arabidopsis thaliana

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Gln Ser Pro Leu Lys Gln Pro Phe Ser Cys Leu Pro Phe Arg Trp Arg
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35

40

45

Arg Ser Tyr Arg Gly Gly Val Arg Ser Ser Thr Thr Glu Thr His Gly
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 Ser Lys Lys Glu Ala Leu Val Ser Glu Thr Ala Thr Thr Ser Ile Glu
 65 70 75 80
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 85 90 95
 Tyr Trp Glu Asp Asn Arg Ile Phe Arg Thr Pro Asp Asp Val Asp Thr
 100 105 110
 Ser Lys Pro Lys Phe Tyr Val Leu Asp Met Phe Pro Tyr Pro Ser Gly
 115 120 125
 Ala Gly Leu His Val Gly His Pro Leu Gly Tyr Thr Ala Thr Asp Ile
 130 135 140
 Leu Ala Arg Leu Arg Arg Met Gln Gly Tyr Asn Val Leu His Pro Met
 145 150 155 160
 Gly Trp Asp Ala Phe Gly Leu Pro Ala Glu Gln Tyr Ala Ile Glu Thr
 165 170 175
 Gly Thr His Pro Lys Thr Thr Thr Leu Lys Asn Ile Asp Arg Phe Arg
 180 185 190
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 195 200 205
 Ser Thr Thr Glu Pro Asp Tyr Tyr Lys Trp Thr Gln Trp Ile Phe Leu
 210 215 220
 Gln Leu Tyr Lys Lys Gly Leu Ala Tyr Gln Ala Glu Val Pro Val Asn
 225 230 235 240
 Trp Cys Pro Ala Leu Gly Thr Val Leu Ala Asn Glu Glu Val Val Asp
 245 250 255
 Gly Val Ser Glu Arg Gly Gly His Pro Val Ile Arg Lys Pro Met Arg
 260 265 270
 Gln Trp Met Leu Lys Ile Thr Ala Tyr Ala Asp Arg Leu Leu Glu Asp
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Trp Ile Gly Arg Ser Glu Gly Ala Glu Leu Asn Phe Ser Ile Leu Asp
 305 310 315 320

Gly Glu Gly Arg Glu Thr Asp Lys Glu Ile Thr Val Tyr Thr Thr Arg
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Pro Asp Thr Leu Phe Gly Ala Thr Tyr Met Val Val Ala Pro Glu His
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Gln Leu Leu Ser Tyr Phe Val Thr Ala Glu Gln Lys Gln Gln Val Glu
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Glu Tyr Lys Asp Phe Ala Ser Arg Lys Ser Asp Leu Glu Arg Thr Glu
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Leu Gln Lys Asp Lys Thr Gly Val Phe Thr Gly Cys Tyr Ala Lys Asn
 385 390 395 400

Pro Ala Asn Gly Asp Ala Ile Pro Ile Trp Val Ala Asp Tyr Val Leu
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Ala Ser Tyr Gly Thr Gly Ala Ile Met Ala Val Pro Ala His Asp Thr
 420 425 430

Arg Asp Asn Glu Phe Ala Leu Lys Tyr Asn Ile Pro Ile Lys Trp Val
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Val Arg Asn Glu Ala Asn Ser Ser Asp Asp Ala Lys Gln Val Tyr Pro
 450 455 460

Gly Leu Gly Ile Ile Glu Asn Ser Ser Thr Leu Glu Thr Gly Leu Asp
 465 470 475 480

Ile Asn Gln Leu Ser Ser Lys Glu Ala Ala Leu Lys Val Ile Glu Trp
 485 490 495

Ala Glu Arg Thr Gly Asn Gly Lys Lys Lys Val Asn Tyr Lys Leu Arg
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Asp Trp Leu Phe Ala Arg Gln Arg Tyr Trp Gly Glu Pro Ile Pro Ile
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Leu Ile Leu Asp Glu Ser Gly Glu Thr Ile Ala Ile Ser Glu Ser Glu
 530 535 540

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Leu Pro Leu Thr Leu Pro Glu Leu Asn Asp Phe Thr Pro Thr Gly Thr
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Gly Glu Pro Pro Leu Ser Lys Ala Val Ser Trp Val Asn Thr Val Asp
565 570 575

Pro Ser Thr Gly Lys Pro Ala Lys Arg Glu Thr Ser Thr Met Pro Gln
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Trp Ala Gly Ser Cys Trp Tyr Tyr Leu Arg Phe Met Asp Pro Lys Asn
595 600 605

Pro Glu Ala Leu Val Asp Lys Glu Lys Glu Lys Tyr Trp Ser Pro Val
610 615 620

Asp Val Tyr Val Gly Gly Ala Glu His Ala Val Leu His Leu Leu Tyr
625 630 635 640

Ser Arg Phe Trp His Lys Val Leu Tyr Asp Ile Gly Val Val Ser Thr
645 650 655

Lys Glu Pro Phe Lys Cys Val Ile Asn Gln Gly Ile Ile Leu Gly Glu
660 665 670

Val Gln Tyr Thr Ala Trp Lys Asp Gln Glu Gly Asn Tyr Val Ser Ala
675 680 685

Asp Thr Glu Glu Arg Leu Asn Glu His Gln Gln Val Thr Ile Pro Glu
690 695 700

Glu Lys Val Ile Lys Ser Gly Asp His Phe Val Leu Lys Glu Asp Pro
705 710 715 720

Ser Ile Arg Leu Ile Pro Arg Val Tyr Lys Met Ser Lys Ser Arg Gly
725 730 735

Asn Val Val Asn Pro Asp Asp Val Val Leu Glu Tyr Gly Ala Asp Ser
740 745 750

Leu Arg Leu Tyr Glu Met Phe Met Gly Pro Phe Arg Asp Ser Lys Thr
755 760 765

Trp Asn Thr Ser Gly Ile Glu Gly Val His Arg Phe Leu Ala Arg Thr
770 775 780

Trp Arg Leu Val Ile Gly Leu Pro Gln Ser Asp Gly Ser Phe Lys Asp
785 790 795 800

Gly Thr Leu Val Thr Asp Asp Glu Pro Thr Leu Glu Gln Leu Arg Thr
 805 810 815

Leu His Lys Cys Ile Ala Lys Val Thr Glu Glu Ile Glu Ser Thr Arg
 820 825 830

Phe Asn Thr Gly Ile Ser Gly Met Met Glu Phe Val Asn Ala Ala Tyr
 835 840 845

Lys Trp Asn Asn Gln Pro Arg Gly Ile Ile Glu Pro Phe Val Leu Leu
 850 855 860

Leu Ser Pro Tyr Ala Pro His Met Ala Glu Glu Leu Trp Ser Arg Leu
 865 870 875 880

Gly His Pro Asn Ser Leu Ala Tyr Glu Ser Phe Pro Lys Ala Asn Pro
 885 890 895

Asp Tyr Leu Lys Asn Thr Thr Ile Val Leu Pro Val Gln Ile Asn Gly
 900 905 910

Lys Thr Arg Gly Thr Ile Glu Val Glu Glu Gly Cys Ser Glu Asp Asp
 915 920 925

Ala Phe Val Leu Ala Ser Gln Asp Asp Lys Leu Arg Lys Tyr Leu Asp
 930 935 940

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Met	Arg	Val	Thr	Ile	Gln	Asp	Gly	Arg	Gln	Leu	Val	Gly	Lys	Phe	Met		
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gcg	ttt	gac	cgt	cac	atg	aac	ctc	ggt	ctc	ggc	gat	tgc	gag	gag	ttt		144
Ala	Phe	Asp	Arg	His	Met	Asn	Leu	Val	Leu	Gly	Asp	Cys	Glu	Glu	Phe		
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cgt	aag	ctt	cca	cca	gct	aaa	ggg	aag	aag	atc	aac	gaa	gag	cgt	gaa		192
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Ser	Met	Thr	Val	Glu	Gly	Pro	Pro	Pro	Pro	Glu	Glu	Ser	Arg	Ala	Lys		
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gct	ggc	tct	gca	gct	gct	ggt	gct	ggt	cca	gga	att	ggc	cgt	gcc	gct		336
Ala	Gly	Ser	Ala	Ala	Ala	Val	Ala	Gly	Pro	Gly	Ile	Gly	Arg	Ala	Ala		
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Gly	Arg	Gly	Val	Pro	Thr	Gly	Pro	Leu	Val	Gln	Ala	Gln	Pro	Gly	Leu		
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Ile	Pro	Pro	Pro	Gly	Gly	Met	Met	Arg	Gly	Pro	Pro	Pro	Pro	Pro	His		
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Gln

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35 40 45

Arg Lys Leu Pro Pro Ala Lys Gly Lys Lys Ile Asn Glu Glu Arg Glu
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Asp Arg Arg Thr Leu Gly Leu Val Leu Leu Arg Gly Glu Glu Val Ile
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Ser Met Thr Val Glu Gly Pro Pro Pro Pro Glu Glu Ser Arg Ala Lys
85 90 95

Ala Gly Ser Ala Ala Ala Val Ala Gly Pro Gly Ile Gly Arg Ala Ala
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Gly Arg Gly Val Pro Thr Gly Pro Leu Val Gln Ala Gln Pro Gly Leu
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130 135 140

Pro Gln Ile Ser Arg Pro Pro Gln Leu Ser Ala Pro Pro Ile Ile Arg
145 150 155 160

Pro Pro Gly Gln Met Leu Pro Pro Pro Pro Phe Gly Gly Gln Gly Pro
Page 92

165

175

Pro Met Gly Arg Gly Pro Pro Pro Pro Tyr Gly Met Arg Pro Pro Pro
180 185 190

Gln Gln Phe Ser Gly Pro Pro Pro Pro Gln Tyr Gly Gln Arg Pro Met
195 200 205

Ile Pro Pro Pro Gly Gly Met Met Arg Gly Pro Pro Pro Pro Pro His
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Ala Val Gln Ile Ser Leu Arg Thr Gln Thr Arg Lys Asn Phe Gln Ile
35 40 45

caa gct act gga agt tca tat ggg act cat ttt cga gtt tca act ttt 192
Gln Ala Thr Gly Ser Ser Tyr Gly Thr His Phe Arg Val Ser Thr Phe
50 55 60

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agg Arg	agg Arg	cct Pro	ggt Gly 100	cag Gln	agc Ser	agg Arg	atc Ile	aca Thr 105	act Thr	cct Pro	aga Arg	aaa Lys	gag Glu 110	act Thr	gat Asp	336
act Thr	tgc Cys	cgg Arg 115	ata Ile	tcg Ser	tct Ser	gga Gly	gtc Val 120	tct Ser	gaa Glu	gga Gly	atg Met	acg Thr 125	aca Thr	gga Gly	aca Thr	384
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att Ile	ttg Leu	aag Lys 195	caa Gln	ttt Phe	gca Ala	gga Gly	act Thr 200	gag Glu	att Ile	ctt Leu	gcc Ala	tat Tyr 205	gtc Val	tcg Ser	caa Gln	624
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aac Asn	tct Ser	gtt Val	ggt Gly 260	ggt Gly	gtt Val	gtg Val	acc Thr	tgc Cys 265	att Ile	gtt Val	cgg Arg	aat Asn	gct Ala 270	cca Pro	cgt Arg	816
ggg Gly	ctt Leu	ggt Gly 275	aca Thr	ccg Pro	gtt Val	ttc Phe	gat Asp 280	aaa Lys	ctt Leu	gaa Glu	gca Ala	gaa Glu 285	ctg Leu	gca Ala	aaa Lys	864
gct Ala	tgt Cys 290	atg Met	tcg Ser	cta Leu	cct Pro	gca Ala 295	act Thr	aag Lys	gga Gly	ttt Phe	gag Glu 300	ttt Phe	gga Gly	agc Ser	ggc Gly	912
ttt Phe	gca Ala	ggt Gly	acc Thr	ttt Phe	ttg Leu	act Thr	ggt Gly	ctt Leu	gaa Glu	cac His	aat Asn	gat Asp	gag Glu	ttc Phe	tat Tyr	960

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305		310		315		320	
acc gat gaa aat gga aga ata cgt acc aga acc aac cga tct ggt gga	1008						
Thr Asp Glu Asn Gly Arg Ile Arg Thr Arg Thr Asn Arg Ser Gly Gly							
				325	330	335	
att cag gga ggg atc tca aat ggt gaa ata ata aac atg aga gta gcc	1056						
Ile Gln Gly Gly Ile Ser Asn Gly Glu Ile Ile Asn Met Arg Val Ala							
				340	345	350	
ttc aag cca aca tca aca att gga agg aag caa aat acg gta acc aga	1104						
Phe Lys Pro Thr Ser Thr Ile Gly Arg Lys Gln Asn Thr Val Thr Arg							
				355	360	365	
gac aag gta gaa acc gaa atg att gcg cgt ggt cgt cat gat cct tgt	1152						
Asp Lys Val Glu Thr Glu Met Ile Ala Arg Gly Arg His Asp Pro Cys							
				375	380		
gtt gtt cca cga gct gtg cca atg gtg gaa gca atg gtg gct cta gtt	1200						
Val Val Pro Arg Ala Val Pro Met Val Glu Ala Met Val Ala Leu Val							
				385	390	395	400
ctt gtg gat caa ttg atg gcg caa tac gca caa tgc cat ttg ttt cca	1248						
Leu Val Asp Gln Leu Met Ala Gln Tyr Ala Gln Cys His Leu Phe Pro							
				405	410	415	
ata aat cca gag ttg cag gaa cct ctc cag ata gag cag ccg caa aat	1296						
Ile Asn Pro Glu Leu Gln Glu Pro Leu Gln Ile Glu Gln Pro Gln Asn							
				420	425	430	
gct act gct ttg taa	1311						
Ala Thr Ala Leu							
				435			

<210> 28

<211> 436

<212> PRT

<213> Arabidopsis thaliana

<400> 28

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Leu Gly Ser Ser Ser Leu Pro Ser Glu Leu Arg Arg Leu Ser Ser Pro
20 25 30

Ala Val Gln Ile Ser Leu Arg Thr Gln Thr Arg Lys Asn Phe Gln Ile
35 40 45

Gln Ala Thr Gly Ser Ser Tyr Gly Thr His Phe Arg Val Ser Thr Phe
50 55 60

Gly Glu Ser His Gly Gly Gly Val Gly Cys Ile Ile Asp Gly Cys Pro
 65 70 75 80

Pro Arg Ile Pro Leu Thr Glu Ser Asp Leu Gln Phe Asp Leu Asp Arg
 85 90 95

Arg Arg Pro Gly Gln Ser Arg Ile Thr Thr Pro Arg Lys Glu Thr Asp
 100 105 110

Thr Cys Arg Ile Ser Ser Gly Val Ser Glu Gly Met Thr Thr Gly Thr
 115 120 125

Pro Ile His Val Phe Val Pro Asn Thr Asp Gln Arg Gly Leu Asp Tyr
 130 135 140

Ser Glu Met Ser Val Ala Tyr Arg Pro Ser His Ala Asp Ala Thr Tyr
 145 150 155 160

Asp Met Lys Tyr Gly Val Arg Ser Val Gln Gly Gly Gly Arg Ser Ser
 165 170 175

Ala Arg Glu Thr Ile Gly Arg Val Ala Pro Gly Ala Leu Ala Lys Lys
 180 185 190

Ile Leu Lys Gln Phe Ala Gly Thr Glu Ile Leu Ala Tyr Val Ser Gln
 195 200 205

Val His His Val Val Leu Pro Glu Glu Leu Val Asp His Glu Asn Leu
 210 215 220

Thr Leu Glu Gln Ile Glu Asn Asn Ile Val Arg Cys Pro Asn Pro Glu
 225 230 235 240

Tyr Ala Glu Lys Met Ile Ala Ala Ile Asp Ala Val Arg Thr Lys Gly
 245 250 255

Asn Ser Val Gly Gly Val Val Thr Cys Ile Val Arg Asn Ala Pro Arg
 260 265 270

Gly Leu Gly Thr Pro Val Phe Asp Lys Leu Glu Ala Glu Leu Ala Lys
 275 280 285

Ala Cys Met Ser Leu Pro Ala Thr Lys Gly Phe Glu Phe Gly Ser Gly
 290 295 300

Phe Ala Gly Thr Phe Leu Thr Gly Leu Glu His Asn Asp Glu Phe Tyr
 305 310 315 320

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Thr Asp Glu Asn Gly Arg Ile Arg Thr Arg Thr Asn Arg Ser Gly Gly
325 330 335

Ile Gln Gly Gly Ile Ser Asn Gly Glu Ile Ile Asn Met Arg Val Ala
340 345 350

Phe Lys Pro Thr Ser Thr Ile Gly Arg Lys Gln Asn Thr Val Thr Arg
355 360 365

Asp Lys Val Glu Thr Glu Met Ile Ala Arg Gly Arg His Asp Pro Cys
370 375 380

Val Val Pro Arg Ala Val Pro Met Val Glu Ala Met Val Ala Leu Val
385 390 395 400

Leu Val Asp Gln Leu Met Ala Gln Tyr Ala Gln Cys His Leu Phe Pro
405 410 415

Ile Asn Pro Glu Leu Gln Glu Pro Leu Gln Ile Glu Gln Pro Gln Asn
420 425 430

Ala Thr Ala Leu
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<210> 29

<211> 1038

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (1)..(1038)

<223>

<400> 29

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Met	Leu	Ser	Leu	Ser	Cys	Ser	Ser	Ser	Ser	Ser	Ser	Leu	Leu	Pro	Pro	
1				5					10				15			

agt	tta	cac	tac	cac	ggt	tct	tct	tct	ggt	cag	tcc	atc	ggt	gta	cca	96
Ser	Leu	His	Tyr	His	Gly	Ser	Ser	Ser	Val	Gln	Ser	Ile	Val	Val	Pro	
			20					25					30			

aga	agg	agt	ctt	atc	tcg	ttt	cgt	cgg	aaa	gtc	tct	tgc	tgt	tgc	ata	144
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Arg	Arg	Ser 35	Leu	Ile	Ser	Phe	Arg 40	Arg	Lys	Val	Ser 45	Cys	Cys	Cys	Ile	
gct Ala	cca Pro	cct Pro	cag Gln	aac Asn	ttg Leu	gac Asp 55	aac Asn	gat Asp	gcc Ala	acc Thr	aaa Lys 60	ttc Phe	gat Asp	agt Ser	ctt Leu	192
acc Thr 65	aag Lys	tct Ser	gga Gly	gga Gly	ggt Gly 70	atg Met	tgt Cys	aaa Lys	gag Glu	cga Arg 75	ggg Gly	ctt Leu	gag Glu	aat Asn	gat Asp 80	240
tct Ser	gat Asp	gtt Val	ctt Leu	att Ile 85	gaa Glu	tgt Cys	aga Arg	gat Asp	gtc Val 90	tat Tyr	aaa Lys	tcg Ser	ttt Phe	ggg Gly 95	gag Glu	288
aaa Lys	cat His	atc Ile	ttg Leu 100	aaa Lys	ggt Gly	gtt Val	agc Ser	ttt Phe 105	aag Lys	att Ile	aga Arg	cat His	ggt Gly 110	gaa Glu	gct Ala	336
gtt Val	ggg Gly	gtg Val 115	att Ile	ggt Gly	cct Pro	tct Ser	gga Gly 120	act Thr	gga Gly	aaa Lys	tca Ser	aca Thr 125	att Ile	tta Leu	aag Lys	384
att Ile 130	atg Met	gct Ala	ggt Gly	ctt Leu	ctt Leu	gct Ala 135	cca Pro	gac Asp	aag Lys	gga Gly	gaa Glu 140	gtt Val	tat Tyr	ata Ile	cga Arg	432
gga Gly 145	aaa Lys	aaa Lys	cga Arg	gct Ala	ggt Gly 150	ttg Leu	ata Ile	agt Ser	gat Asp	gag Glu 155	gaa Glu	ata Ile	tca Ser	gga Gly	ctt Leu 160	480
cgt Arg	att Ile	ggc Gly	ctg Leu	gta Val 165	ttt Phe	cag Gln	agt Ser	gca Ala	gct Ala 170	ctc Leu	ttt Phe	gat Asp	tca Ser	cta Leu 175	tca Ser	528
gtt Val	cgt Arg	gaa Glu	aat Asn 180	gtt Val	ggt Gly	ttt Phe	cta Leu	ctt Leu 185	tat Tyr	gaa Glu	aga Arg	tca Ser	aaa Lys 190	atg Met	tcc Ser	576
gag Glu	aat Asn	caa Gln 195	ata Ile	tct Ser	gag Glu	ctt Leu	gtg Val 200	aca Thr	caa Gln	acc Thr	ttg Leu	gca Ala 205	gct Ala	gtt Val	ggt Gly	624
ttg Leu 210	aag Lys	ggg Gly	gtt Val	gag Glu	aat Asn	cga Arg 215	tta Leu	cct Pro	tct Ser	gag Glu	cta Leu 220	tct Ser	ggt Gly	gga Gly	atg Met	672
aag Lys 225	aaa Lys	agg Arg	gtt Val	gct Ala	tta Leu 230	gct Ala	cgt Arg	tca Ser	cta Leu	att Ile 235	ttt Phe	gat Asp	aca Thr	aca Thr	aaa Lys 240	720
gag Glu	gtc Val	ata Ile	gag Glu	cca Pro 245	gag Glu	gtg Val	ctt Leu	ttg Leu	tac Tyr 250	gat Asp	gag Glu	cca Pro	act Thr	gct Ala 255	gga Gly	768
ctt Leu	gat Asp	cca Pro	att Ile 260	gca Ala	tca Ser	act Thr	gta Val	gtt Val 265	gaa Glu	gat Asp	ctt Leu	ata Ile	cgg Arg 270	tct Ser	gtt Val	816
cac His	atg Met	aca Thr 275	gac Asp	gaa Glu	gat Asp	gca Ala	gtt Val 280	gga Gly	aaa Lys	cct Pro	gga Gly	aaa Lys 285	att Ile	gcg Ala	tct Ser	864

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tat	ctt	ggt	ggt	acc	cat	caa	cat	agc	acc	att	caa	aga	gct	gta	gac	912
Tyr	Leu	Val	Val	Thr	His	Gln	His	Ser	Thr	Ile	Gln	Arg	Ala	Val	Asp	
	290					295					300					
agg	tta	ttg	ttt	ctg	tat	gaa	gga	aag	atc	ggt	tgg	caa	gga	atg	aca	960
Arg	Leu	Leu	Phe	Leu	Tyr	Glu	Gly	Lys	Ile	Val	Trp	Gln	Gly	Met	Thr	
305					310					315					320	
cat	gaa	ttc	aca	acc	tca	act	aat	cca	ata	ggt	caa	cag	ttt	gct	aca	1008
His	Glu	Phe	Thr	Thr	Ser	Thr	Asn	Pro	Ile	Val	Gln	Gln	Phe	Ala	Thr	
				325					330					335		
ggc	agc	ctc	gat	gga	cca	atc	aga	tac	tag							1038
Gly	Ser	Leu	Asp	Gly	Pro	Ile	Arg	Tyr								
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<211> 345

<212> PRT

<213> Arabidopsis thaliana

<400> 30

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			20					25					30		
Arg	Arg	Ser	Leu	Ile	Ser	Phe	Arg	Arg	Lys	Val	Ser	Cys	Cys	Cys	Ile
		35					40					45			
Ala	Pro	Pro	Gln	Asn	Leu	Asp	Asn	Asp	Ala	Thr	Lys	Phe	Asp	Ser	Leu
	50					55					60				
Thr	Lys	Ser	Gly	Gly	Gly	Met	Cys	Lys	Glu	Arg	Gly	Leu	Glu	Asn	Asp
65				70						75				80	
Ser	Asp	Val	Leu	Ile	Glu	Cys	Arg	Asp	Val	Tyr	Lys	Ser	Phe	Gly	Glu
				85					90					95	
Lys	His	Ile	Leu	Lys	Gly	Val	Ser	Phe	Lys	Ile	Arg	His	Gly	Glu	Ala
			100					105					110		
Val	Gly	Val	Ile	Gly	Pro	Ser	Gly	Thr	Gly	Lys	Ser	Thr	Ile	Leu	Lys
		115					120					125			
Ile	Met	Ala	Gly	Leu	Leu	Ala	Pro	Asp	Lys	Gly	Glu	Val	Tyr	Ile	Arg
	130					135					140				

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Gly Lys Lys Arg Ala Gly Leu Ile Ser Asp Glu Glu Ile Ser Gly Leu
 145 150 155 160

Arg Ile Gly Leu Val Phe Gln Ser Ala Ala Leu Phe Asp Ser Leu Ser
 165 170 175

Val Arg Glu Asn Val Gly Phe Leu Leu Tyr Glu Arg Ser Lys Met Ser
 180 185 190

Glu Asn Gln Ile Ser Glu Leu Val Thr Gln Thr Leu Ala Ala Val Gly
 195 200 205

Leu Lys Gly Val Glu Asn Arg Leu Pro Ser Glu Leu Ser Gly Gly Met
 210 215 220

Lys Lys Arg Val Ala Leu Ala Arg Ser Leu Ile Phe Asp Thr Thr Lys
 225 230 235 240

Glu Val Ile Glu Pro Glu Val Leu Leu Tyr Asp Glu Pro Thr Ala Gly
 245 250 255

Leu Asp Pro Ile Ala Ser Thr Val Val Glu Asp Leu Ile Arg Ser Val
 260 265 270

His Met Thr Asp Glu Asp Ala Val Gly Lys Pro Gly Lys Ile Ala Ser
 275 280 285

Tyr Leu Val Val Thr His Gln His Ser Thr Ile Gln Arg Ala Val Asp
 290 295 300

Arg Leu Leu Phe Leu Tyr Glu Gly Lys Ile Val Trp Gln Gly Met Thr
 305 310 315 320

His Glu Phe Thr Thr Ser Thr Asn Pro Ile Val Gln Gln Phe Ala Thr
 325 330 335

Gly Ser Leu Asp Gly Pro Ile Arg Tyr
 340 345

<210> 31

<211> 4035

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (1)..(4035)

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1				5					10					15		

gat	ctc	ggt	att	ctc	ttc	aaa	cct	tca	tcc	aat	cct	tat	ccg	cca	ccg	96
Asp	Leu	Gly	Ile	Leu	Phe	Lys	Pro	Ser	Ser	Asn	Pro	Tyr	Pro	Pro	Pro	
			20					25					30			

gcg	gca	tct	tat	cct	ccg	cct	aca	ggt	cct	ttt	ctt	cac	aac	cag	tac	144
Ala	Ala	Ser	Tyr	Pro	Pro	Pro	Thr	Gly	Pro	Phe	Leu	His	Asn	Gln	Tyr	
		35					40					45				

gat	cag	cag	cac	tac	gct	ccg	cct	ggt	atc	tcc	gct	caa	cca	tct	ccg	192
Asp	Gln	Gln	His	Tyr	Ala	Pro	Pro	Gly	Ile	Ser	Ala	Gln	Pro	Ser	Pro	
	50					55					60					

gtg	act	cag	cag	caa	cag	gat	gtg	tct	tcc	tct	tcc	gcc	gcg	act	aac	240
Val	Thr	Gln	Gln	Gln	Gln	Asp	Val	Ser	Ser	Ser	Ser	Ala	Ala	Thr	Asn	
65					70					75					80	

ttg	cat	cct	cag	aga	acg	ctg	tct	tat	ccc	acg	cca	cct	ctc	aat	cta	288
Leu	His	Pro	Gln	Arg	Thr	Leu	Ser	Tyr	Pro	Thr	Pro	Pro	Leu	Asn	Leu	
				85					90					95		

caa	tcc	ccc	cgt	tcc	aat	cac	aat	ccc	ggt	acg	cac	atc	ctc	gct	ctc	336
Gln	Ser	Pro	Arg	Ser	Asn	His	Asn	Pro	Gly	Thr	His	Ile	Leu	Ala	Leu	
			100					105					110			

ctt	aac	aat	acc	aac	aac	gga	gcc	ccc	gtg	gct	aac	caa	gag	ccg	tcg	384
Leu	Asn	Asn	Thr	Asn	Asn	Gly	Ala	Pro	Val	Ala	Asn	Gln	Glu	Pro	Ser	
		115					120					125				

cat	cag	ctc	cca	gta	gtc	aat	cac	aac	gag	atc	gct	cgc	tct	ttt	ccc	432
His	Gln	Leu	Pro	Val	Val	Asn	His	Asn	Glu	Ile	Ala	Arg	Ser	Phe	Pro	
	130					135					140					

ggc	ggt	tca	ggt	cct	att	cgt	gta	ccg	agc	tgt	aaa	ttg	ccc	aag	gga	480
Gly	Gly	Ser	Gly	Pro	Ile	Arg	Val	Pro	Ser	Cys	Lys	Leu	Pro	Lys	Gly	
145					150					155					160	

agg	cga	ttg	att	ggt	gaa	cac	gct	gtg	tac	gat	ggt	gat	gtg	aga	tta	528
Arg	Arg	Leu	Ile	Gly	Glu	His	Ala	Val	Tyr	Asp	Val	Asp	Val	Arg	Leu	
				165					170					175		

caa	ggt	gag	att	cag	ccg	cag	ctg	gag	gtg	act	ccg	att	acc	aaa	tac	576
Gln	Gly	Glu	Ile	Gln	Pro	Gln	Leu	Glu	Val	Thr	Pro	Ile	Thr	Lys	Tyr	
			180					185					190			

ggg	tcg	gat	cct	cag	ctc	gta	gtg	ggt	agg	caa	atc	gcc	gtg	aat	aag	624
Gly	Ser	Asp	Pro	Gln	Leu	Val	Val	Gly	Arg	Gln	Ile	Ala	Val	Asn	Lys	
		195					200					205				

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	210					215				220						
atc Ile	aac Asn	aca Thr	gca Ala	ttg Leu	agg Arg	tct Ser	ctg Leu	ttc Phe	cgt Arg	ggc Gly	cat His	tca Ser	cag Gln	aga Arg	gtg Val	720
225					230					235					240	
acg Thr	gat Asp	atg Met	gct Ala	ttc Phe	ttt Phe	gcc Ala	gag Glu	gat Asp	gtt Val	gat Asp	atg Met	ttg Leu	gcc Ala	agt Ser	gtt Val	768
				245					250					255		
agc Ser	cta Leu	gat Asp	gga Gly	aaa Lys	gtt Val	ttt Phe	gtg Val	tgg Trp	aaa Lys	att Ile	tct Ser	gaa Glu	ggg Gly	tct Ser	gag Glu	816
			260					265					270			
gga Gly	gag Glu	gat Asp	cag Gln	ccc Pro	caa Gln	ata Ile	act Thr	ggg Gly	aag Lys	ata Ile	gta Val	ctt Leu	gct Ala	ctt Leu	cag Gln	864
		275					280					285				
ata Ile	cta Leu	gga Gly	gag Glu	gaa Glu	gac Asp	acc Thr	aaa Lys	cat His	cca Pro	cgc Arg	gtt Val	tgt Cys	tgg Trp	cac His	tgc Cys	912
	290					295					300					
cac His	aaa Lys	cag Gln	gaa Glu	att Ile	ttg Leu	gta Val	gtt Val	tca Ser	att Ile	ggt Gly	aaa Lys	cat His	gta Val	ctg Leu	cgt Arg	960
305					310					315					320	
att Ile	gat Asp	act Thr	aca Thr	aaa Lys	gtt Val	ggc Gly	aga Arg	ggt Gly	gaa Glu	gta Val	ttc Phe	tct Ser	gct Ala	gag Glu	gct Ala	1008
				325					330					335		
cct Pro	ctc Leu	cag Gln	tgt Cys	ccc Pro	ctt Leu	gat Asp	aag Lys	ctg Leu	atc Ile	gat Asp	ggt Gly	gtt Val	cag Gln	att Ile	gtt Val	1056
			340					345					350			
ggt Gly	aag Lys	cat His	gat Asp	gga Gly	gaa Glu	gtg Val	aca Thr	gat Asp	ttg Leu	tca Ser	atg Met	tgc Cys	caa Gln	tgg Trp	atg Met	1104
		355					360					365				
acc Thr	acg Thr	cgt Arg	ctg Leu	gtt Val	tct Ser	tct Ser	tca Ser	gtt Val	gat Asp	ggc Gly	acg Thr	att Ile	aag Lys	ata Ile	tgg Trp	1152
	370					375					380					
caa Gln	gat Asp	cgt Arg	aag Lys	gca Ala	caa Gln	cca Pro	ctt Leu	gta Val	gtt Val	ttg Leu	agg Arg	cct Pro	cat His	gat Asp	gga Gly	1200
385					390					395				400		
cat His	cca Pro	gtc Val	agt Ser	tca Ser	gcc Ala	acg Thr	ttt Phe	gtg Val	aca Thr	tct Ser	cct Pro	gag Glu	aga Arg	cct Pro	gat Asp	1248
				405					410					415		
cac His	atc Ile	ata Ile	ctt Leu	atc Ile	acg Thr	ggg Gly	ggt Gly	cct Pro	cta Leu	aat Asn	cga Arg	gaa Glu	atg Met	aaa Lys	atc Ile	1296
			420					425					430			
tgg Trp	gtc Val	tct Ser	gct Ala	ggg Gly	gaa Glu	gaa Glu	ggg Gly	tgg Trp	ctt Leu	tta Leu	cca Pro	gct Ala	gat Asp	gct Ala	gaa Glu	1344
		435					440					445				
tca Ser	tgg Trp	agg Arg	tgt Cys	acc Thr	cag Gln	act Thr	ctt Leu	gac Asp	ttg Leu	aaa Lys	agt Ser	tca Ser	acc Thr	gag Glu	cca Pro	1392

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450	455	460	
cga gct gaa gag gca ttt ttt aac caa gtc ata gca tta tct gaa gca Arg Ala Glu Glu Ala Phe Phe Asn Gln Val Ile Ala Leu Ser Glu Ala 465 470 475 480			1440
ggc ttg ctt tta ctt gca aat gca aaa agg aac gcc tta tat gct gtg Gly Leu Leu Leu Leu Ala Asn Ala Lys Arg Asn Ala Leu Tyr Ala Val 485 490 495			1488
cat ttg gac tat ggt tct tct cca gtt ggt acg cgg atg gat tac cta His Leu Asp Tyr Gly Ser Ser Pro Val Gly Thr Arg Met Asp Tyr Leu 500 505 510			1536
tca gag ttt aca gtc act atg ccc ata ttg agt ttc att ggg aca aat Ser Glu Phe Thr Val Thr Met Pro Ile Leu Ser Phe Ile Gly Thr Asn 515 520 525			1584
gat cct cca gaa gaa ccc att gtt aag gtt tat tgt gtt cag act cta Asp Pro Pro Glu Glu Pro Ile Val Lys Val Tyr Cys Val Gln Thr Leu 530 535 540			1632
gca atc cag cag tat aca tta gac ttg tgc tta tgc ttg cca cca cct Ala Ile Gln Gln Tyr Thr Leu Asp Leu Cys Leu Cys Leu Pro Pro Pro 545 550 555 560			1680
ata gaa aat atg ggt ttg gag aag tca gat tct agt gta tca cga gag Ile Glu Asn Met Gly Leu Glu Lys Ser Asp Ser Ser Val Ser Arg Glu 565 570 575			1728
gca aat ctt gtt gaa ggc atg tca gaa cca tct gga ctt aaa cct act Ala Asn Leu Val Glu Gly Met Ser Glu Pro Ser Gly Leu Lys Pro Thr 580 585 590			1776
gac tta cct tca gtt gat tca gtg cca aaa cct tcg att ata gtg aat Asp Leu Pro Ser Val Asp Ser Val Pro Lys Pro Ser Ile Ile Val Asn 595 600 605			1824
aga tca gaa agt gct aat aag ttg agt ttt cca tca gcg gaa gcc aca Arg Ser Glu Ser Ala Asn Lys Leu Ser Phe Pro Ser Ala Glu Ala Thr 610 615 620			1872
tca caa gca att gtt cca ccc aac ggt gaa cct aaa act tct ggc ctg Ser Gln Ala Ile Val Pro Pro Asn Gly Glu Pro Lys Thr Ser Gly Leu 625 630 635 640			1920
cca tct caa acc agt ggt gca ggt tct gcg tat gct act tta ccc caa Pro Ser Gln Thr Ser Gly Ala Gly Ser Ala Tyr Ala Thr Leu Pro Gln 645 650 655			1968
ctt cct ctc agt ccc aga cta tca agt aaa ctt tct ggc tat cac act Leu Pro Leu Ser Pro Arg Leu Ser Ser Lys Leu Ser Gly Tyr His Thr 660 665 670			2016
cct gta gag gcg att gag cca gta ata cct cat cat gag ctt ggt ggc Pro Val Glu Ala Ile Glu Pro Val Ile Pro His His Glu Leu Gly Gly 675 680 685			2064
aaa aca cct tct gct gat tac tct gtt gat agg caa atg gat gct gtt Lys Thr Pro Ser Ala Asp Tyr Ser Val Asp Arg Gln Met Asp Ala Val 690 695 700			2112
gga gaa aga aat ttg gac gtg tca tcc gta gaa gaa atc tca aga agc 705 710 715			2160

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Gly 705	Glu	Arg	Asn	Leu	Asp 710	Val	Ser	Ser	Val	Glu 715	Glu	Ile	Ser	Arg	Ser 720	
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cca Pro	tca Ser	gct Ala	ttt Phe 740	ttc Phe	aaa Lys	cac His	ccc Pro	act Thr 745	cat His	ctt Leu	gta Val	act Thr	cct Pro 750	tca Ser	gag Glu	2256
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aat Asn 945	gct Ala	gcc Ala	act Thr	ggc Gly	cct Pro 950	atc Ile	gga Gly	aaa Lys	gaa Glu	agt Ser 955	aaa Lys	aga Arg	cta Leu	gaa Glu	gtt Val 960	2880

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Ser Glu Arg Lys Tyr Glu Glu Ser Phe Thr Ser Ala Leu Gln Arg	
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Arg Gly Leu Leu Ala Met Asn Pro Leu Pro Leu Ser Gln Gly Val	
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Leu Leu Ser Leu Leu Gln Gln Leu Ala Cys Asp Ile Ser Lys Asp	
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		20					25					30			

Ala	Ala	Ser	Tyr	Pro	Pro	Pro	Thr	Gly	Pro	Phe	Leu	His	Asn	Gln	Tyr
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35

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Asp Gln Gln His Tyr Ala Pro Pro Gly Ile Ser Ala Gln Pro Ser Pro
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Val Thr Gln Gln Gln Gln Asp Val Ser Ser Ser Ser Ala Ala Thr Asn
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Ile Asp Thr Thr Lys Val Gly Arg Gly Glu Val Phe Ser Ala Glu Ala
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Pro Leu Gln Cys Pro Leu Asp Lys Leu Ile Asp Gly Val Gln Ile Val
 340 345 350

Gly Lys His Asp Gly Glu Val Thr Asp Leu Ser Met Cys Gln Trp Met
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Thr Thr Arg Leu Val Ser Ser Ser Val Asp Gly Thr Ile Lys Ile Trp
 370 375 380

Gln Asp Arg Lys Ala Gln Pro Leu Val Val Leu Arg Pro His Asp Gly
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His Pro Val Ser Ser Ala Thr Phe Val Thr Ser Pro Glu Arg Pro Asp
 405 410 415

His Ile Ile Leu Ile Thr Gly Gly Pro Leu Asn Arg Glu Met Lys Ile
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Trp Val Ser Ala Gly Glu Glu Gly Trp Leu Leu Pro Ala Asp Ala Glu
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Ser Glu Phe Thr Val Thr Met Pro Ile Leu Ser Phe Ile Gly Thr Asn
 515 520 525

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565 570 575

Ala Asn Leu Val Glu Gly Met Ser Glu Pro Ser Gly Leu Lys Pro Thr
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Asp Leu Pro Ser Val Asp Ser Val Pro Lys Pro Ser Ile Ile Val Asn
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Ser Gln Ala Ile Val Pro Pro Asn Gly Glu Pro Lys Thr Ser Gly Leu
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Pro Val Glu Ala Ile Glu Pro Val Ile Pro His His Glu Leu Gly Gly
675 680 685

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Lys Asp Ser Asn Val Thr Pro Asp Asp Asp Val Ser Gly Met Arg Ser
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740 745 750

Ile Leu Met Gly Val Ser Ser Ala Glu Ala Ser Ile Thr Thr Glu Asp
755 760 765

Arg Arg Asp Arg Asp Ala Asn Ile Gln Asp Val Asn Asn Asp Pro Arg
770 775 780

Asp Thr Glu Val Glu Val Lys Glu Ile Ser Glu Ala Arg Ser Thr Gln
785 790 795 800

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820 825 830

Met Ala Arg Asp Cys Tyr Pro Ser Thr Glu Gly Thr Phe Ile Pro Gly
835 840 845

Glu Ser Lys Ala Tyr Gly Gln Pro Ile Lys Ala Gly Asp Glu Ser Gly
850 855 860

Val Asp Ser Arg Gly Gly Pro Ala Lys Leu Leu Lys Gly Lys Lys Gln
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Lys Ala Lys Asn Ser Gln Gly Pro Gly Leu Ser Ser Thr Ser Ser Asn
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Val Ala Asn Leu Ala Asp Ser Phe Asn Glu Gln Ser Gln Ser Leu Ser
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His Pro Met Thr Asp Leu Leu Pro Gln Leu Leu Ala Met Gln Glu Thr
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Met Asn Gln Val Met Ala Ser Gln Lys Glu Met Gln Arg Gln Leu Ser
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Asn Ala Ala Thr Gly Pro Ile Gly Lys Glu Ser Lys Arg Leu Glu Val
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Arg Asp His Ala Gln Gln Ile Val Asn Ala Thr Thr Asn Phe Met Ser
995 1000 1005

Lys Glu Leu Asn Ala Met Phe Glu Lys Thr Ile Lys Lys Glu Leu
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Ala Ala Ile Gly Pro Ala Leu Ala Arg Ser Val Val Pro Val Ile
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Glu Lys Thr Val Ser Ser Ala Ile Thr Glu Ser Phe Gln Arg Gly
Page 110

1040

1045

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Glu	Ser	Ser	Val	Ile	Pro	Ser	Phe	Glu	Lys	Ala	Cys	Lys	Ala	Met
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Phe	Asp	Gln	Ile	Asp	Ser	Ala	Phe	Gln	Lys	Gly	Ile	Ala	Glu	His
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	1190					1195					1200			
Val	Glu	Ala	Pro	Met	Asp	Pro	Thr	Thr	Glu	Leu	Ser	Arg	Leu	Ile
	1205					1210					1215			
Ser	Glu	Arg	Lys	Tyr	Glu	Glu	Ser	Phe	Thr	Ser	Ala	Leu	Gln	Arg
	1220					1225					1230			
Ser	Asp	Val	Ser	Ile	Val	Ser	Trp	Leu	Cys	Ser	Gln	Val	Asp	Leu
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Arg	Gly	Leu	Leu	Ala	Met	Asn	Pro	Leu	Pro	Leu	Ser	Gln	Gly	Val
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Leu	Leu	Ser	Leu	Leu	Gln	Gln	Leu	Ala	Cys	Asp	Ile	Ser	Lys	Asp
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Glu Gln Val Tyr Gln Ile Leu His His His Arg Asn Ala Pro Gly
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 Ala Ser Gly Arg Lys Thr Leu Pro Gln Ser Ala Ile Gln Arg Ile Ala
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gag aag ctt cgt agc ctt gga ttc gtg gaa gag aag cat gat tca ccg 240
 Glu Lys Leu Arg Ser Leu Gly Phe Val Glu Glu Lys His Asp Ser Pro
 65 70 75 80

act agg aga atc acg gga gaa gaa tct ggt aag aat tcc cca gga gag 288
 Thr Arg Arg Ile Thr Gly Glu Glu Ser Gly Lys Asn Ser Pro Gly Glu
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95

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Gly	Pro	Arg	Phe 340	Thr	Asp	Trp	Trp	Ala 345	Tyr	Asp	Pro	Leu	Pro 350	Val	Asp	
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ctt Leu 370	ctt Leu	cca Pro	tat Tyr	ggc Gly	gtc Val	agt Ser 375	cca Pro	aaa Lys	cta Leu	act Thr	gat Asp 380	gat Asp	gaa Glu	atg Met	acc Thr	1152
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aag Lys 545	ttg Leu	tcc Ser	atg Met	gcg Ala	ttg Leu 550	gaa Glu	aag Lys	aaa Lys	gca Ala 555	aat Asn	gca Ala	gaa Glu	aaa Lys	gtc Val	ctg Leu 560	1680
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725 730 735	
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740 745 750	
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835 840 845	

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aaa agc gaa aat gat ggg ttg gtc aca gat ctg tcc aat aga gaa agg Lys Ser Glu Asn Asp Gly Leu Val Thr Asp Leu Ser Asn Arg Glu Arg 865 870 875 880	2640
ctc att ctg aga aaa caa gcc ctt aag atg aaa aag cga cca ccc ttt Leu Ile Leu Arg Lys Gln Ala Leu Lys Met Lys Lys Arg Pro Pro Phe 885 890 895	2688
gca gta gga aga agc aac gtt gtt aca ggt tta gca aga aca ctg aag Ala Val Gly Arg Ser Asn Val Val Thr Gly Leu Ala Arg Thr Leu Lys 900 905 910	2736
atg cat ttt cag aaa aac cct cta gca atc gta aac gtc aaa gga aga Met His Phe Gln Lys Asn Pro Leu Ala Ile Val Asn Val Lys Gly Arg 915 920 925	2784
gca aat gga aca tct gtg caa gaa gtc atc gca aag cta aag gaa gaa Ala Asn Gly Thr Ser Val Gln Glu Val Ile Ala Lys Leu Lys Glu Glu 930 935 940	2832
aca gga gct ctt ctg gtg tca cag gag cca agt aaa gtc ata ctt tac Thr Gly Ala Leu Leu Val Ser Gln Glu Pro Ser Lys Val Ile Leu Tyr 945 950 955 960	2880
cgc gga tgg gga gcg gaa gaa gaa atg aaa agc ttc tac cca aat aac Arg Gly Trp Gly Ala Glu Glu Glu Met Lys Ser Phe Tyr Pro Asn Asn 965 970 975	2928
aat gtc aaa agc tct ata aat cta ccc tct acg aga agc ttt gtt gat Asn Val Lys Ser Ser Ile Asn Leu Pro Ser Thr Arg Ser Phe Val Asp 980 985 990	2976
gat cct cct cat gtg tct cct gca ctc atc gaa gcc ata aga ctt gaa Asp Pro Pro His Val Ser Pro Ala Leu Ile Glu Ala Ile Arg Leu Glu 995 1000 1005	3024
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<212> PRT

<213> Arabidopsis thaliana

<400> 34

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-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

20

25

30

Ser Arg Arg Asn Val Ser Arg Ala Asn Ser Gly Ile Phe Cys Ser Ser
 35 40 45

Ala Ser Gly Arg Lys Thr Leu Pro Gln Ser Ala Ile Gln Arg Ile Ala
 50 55 60

Glu Lys Leu Arg Ser Leu Gly Phe Val Glu Glu Lys His Asp Ser Pro
 65 70 75 80

Thr Arg Arg Ile Thr Gly Glu Glu Ser Gly Lys Asn Ser Pro Gly Glu
 85 90 95

Ile Phe Val Pro Leu Pro Lys Gln Leu Pro Ile His Arg Val Gly His
 100 105 110

Thr Ile Asp Thr Ser Trp Ser Thr Pro Ser Tyr Pro Val Pro Lys Pro
 115 120 125

Gly Ser Gly Thr Ala Ile Ser Arg Tyr His Glu Leu Lys Arg Val Trp
 130 135 140

Lys Lys Glu Thr Glu Met Glu Arg Lys Lys Glu Glu Lys Val Pro Ser
 145 150 155 160

Leu Ala Glu Leu Thr Leu Pro Pro Ala Glu Leu Arg Arg Leu Arg Thr
 165 170 175

Val Gly Ile Arg Leu Thr Lys Lys Leu Lys Ile Gly Lys Ala Gly Ile
 180 185 190

Thr Glu Gly Ile Val Asn Gly Ile His Glu Arg Trp Arg Thr Thr Glu
 195 200 205

Val Val Lys Ile Phe Cys Glu Asp Ile Ser Arg Met Asn Met Lys Arg
 210 215 220

Thr His Asp Val Leu Glu Thr Lys Thr Gly Gly Leu Val Ile Trp Arg
 225 230 235 240

Ser Gly Ser Lys Ile Leu Leu Tyr Arg Gly Val Asn Tyr Gln Tyr Pro
 245 250 255

Tyr Phe Val Ser Asp Arg Asp Leu Ala His Glu Ala Ala Ser Gly Ala
 260 265 270

Ser Ser Met Asp Gln Gly Val Val Asp Ser Arg Glu Lys Gln Ser Ile
 275 280 285

Ala Glu Ser Ser Ala Pro Ser Ile Thr Asn Lys Met Val Lys Pro Met
 290 295 300

Leu Thr Gln Gly Val Gly Ser Pro Asp Lys Val Arg Phe Gln Leu Pro
 305 310 315 320

Gly Glu Val Gln Leu Val Glu Glu Ala Asp Arg Leu Leu Glu Gly Leu
 325 330 335

Gly Pro Arg Phe Thr Asp Trp Trp Ala Tyr Asp Pro Leu Pro Val Asp
 340 345 350

Gly Asp Leu Leu Pro Ala Val Val Pro Asp Tyr Arg Arg Pro Phe Arg
 355 360 365

Leu Leu Pro Tyr Gly Val Ser Pro Lys Leu Thr Asp Asp Glu Met Thr
 370 375 380

Thr Ile Arg Arg Leu Gly Arg Pro Leu Pro Cys His Phe Ala Leu Gly
 385 390 395 400

Arg Asn Arg Asn Leu Gln Gly Leu Ala Val Ala Ile Val Lys Leu Trp
 405 410 415

Glu Lys Cys Glu Leu Ala Lys Ile Ala Val Lys Arg Gly Val Gln Asn
 420 425 430

Thr Asn Ser Glu Leu Met Ala Glu Glu Leu Lys Trp Leu Thr Gly Gly
 435 440 445

Thr Leu Ile Ser Arg Asp Lys Asp Phe Ile Val Leu Tyr Arg Gly Lys
 450 455 460

Asp Phe Leu Pro Ser Ala Val Ser Ser Ala Ile Glu Glu Arg Arg Arg
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Gln Thr Met Ile Met Glu Asn Ser Ser Val His Gly Asn Lys Leu Thr
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Glu Asn Glu Glu Glu Ile Lys Pro Arg Ala Val Lys Glu Asp Ile Glu
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Leu Glu Ala Lys Asp Gln Lys Asp His Ile Gln Thr His Gln Met Lys
 515 520 525

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Ser Arg Gln Arg Asn Ser Pro Glu Ala Ile Leu Glu Lys Thr Ser Met
 530 535 540

Lys Leu Ser Met Ala Leu Glu Lys Lys Ala Asn Ala Glu Lys Val Leu
 545 550 555 560

Ala Asp Leu Glu Asn Arg Glu Ser Pro Gln Leu Ser Asp Ile Asp Lys
 565 570 575

Glu Gly Ile Thr Asn Asp Glu Lys Tyr Met Leu Arg Lys Ile Gly Leu
 580 585 590

Lys Met Lys Pro Phe Leu Leu Leu Gly Arg Arg Gly Val Phe Asp Gly
 595 600 605

Thr Ile Glu Asn Met His Leu His Trp Lys Tyr Arg Glu Leu Val Lys
 610 615 620

Ile Ile Cys Asn Glu Tyr Ser Ile Glu Ala Ala His Lys Val Ala Glu
 625 630 635 640

Ile Leu Glu Ala Glu Ser Gly Gly Ile Leu Val Ala Val Glu Met Val
 645 650 655

Ser Lys Gly Tyr Ala Ile Ile Val Tyr Arg Gly Lys Asn Tyr Glu Arg
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Pro Gln Cys Leu Arg Pro Gln Thr Leu Leu Ser Lys Arg Glu Ala Leu
 675 680 685

Lys Arg Ser Val Glu Ala Gln Arg Arg Lys Ser Leu Lys Leu His Val
 690 695 700

Leu Lys Leu Ser Asn Asn Ile Glu Glu Leu Asn Arg Gln Leu Val Glu
 705 710 715 720

Asp Ser Ala Thr Asn Glu Thr Trp Ser Asp Gly Glu Ser Ser Asn Met
 725 730 735

Met Val Glu Glu Glu Thr Glu Asn Gln His Thr Glu Pro Glu Lys Ala
 740 745 750

Arg Glu Lys Ile Glu Leu Gly Tyr Ser Ser Asp Leu Ser Val Pro Ser
 755 760 765

Ser Gly Glu Glu Asn Trp Glu Asp Asp Ser Glu Gly Glu Val Asp Pro
 770 775 780

Leu Thr Thr Ser Ser Gln Glu Tyr Gln Glu Asp Glu Ser Glu Ser Ala
 785 790 795 800
 Ser Ser Gln Arg His Glu Gly Asn Ser Leu Asp Ser Thr Ala Asn Leu
 805 810 815
 Ser Val Phe Ala Glu Thr Gly Ser Ala Asn Ala Ser Ser Phe His Asp
 820 825 830
 Arg Ser Leu Pro His Asn Ser Phe Leu Asn Ala Asn Arg Lys Leu Pro
 835 840 845
 Gly Ser Ser Thr Gly Ser Gly Ser Gln Ile Ser Ala Leu Arg Glu Arg
 850 855 860
 Lys Ser Glu Asn Asp Gly Leu Val Thr Asp Leu Ser Asn Arg Glu Arg
 865 870 875 880
 Leu Ile Leu Arg Lys Gln Ala Leu Lys Met Lys Lys Arg Pro Pro Phe
 885 890 895
 Ala Val Gly Arg Ser Asn Val Val Thr Gly Leu Ala Arg Thr Leu Lys
 900 905 910
 Met His Phe Gln Lys Asn Pro Leu Ala Ile Val Asn Val Lys Gly Arg
 915 920 925
 Ala Asn Gly Thr Ser Val Gln Glu Val Ile Ala Lys Leu Lys Glu Glu
 930 935 940
 Thr Gly Ala Leu Leu Val Ser Gln Glu Pro Ser Lys Val Ile Leu Tyr
 945 950 955 960
 Arg Gly Trp Gly Ala Glu Glu Glu Met Lys Ser Phe Tyr Pro Asn Asn
 965 970 975
 Asn Val Lys Ser Ser Ile Asn Leu Pro Ser Thr Arg Ser Phe Val Asp
 980 985 990
 Asp Pro Pro His Val Ser Pro Ala Leu Ile Glu Ala Ile Arg Leu Glu
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 Cys Gly Leu
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<211> 654

<212> DNA

<213> Arabidopsis thaliana

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<221> CDS

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cta tcg aac cct aga att tct caa gct tcc atg tct ttc tgt acc aac	96
Leu Ser Asn Pro Arg Ile Ser Gln Ala Ser Met Ser Phe Cys Thr Asn	
20 25 30	
aac atc act tcc cca gaa gac tcc gac ttt gac gag tta gaa tcg ccc	144
Asn Ile Thr Ser Pro Glu Asp Ser Asp Phe Asp Glu Leu Glu Ser Pro	
35 40 45	
att gaa cca aag gcc tca gat cca gtt tct cga ttt tcc gga gaa gaa	192
Ile Glu Pro Lys Ala Ser Asp Pro Val Ser Arg Phe Ser Gly Glu Glu	
50 55 60	
cgc gtt atg gaa gag cgt cca ctc gaa aat ggc ctt gac tct ggc att	240
Arg Val Met Glu Glu Arg Pro Leu Glu Asn Gly Leu Asp Ser Gly Ile	
65 70 75 80	
ttc aag gca ata ttg gtg ggg caa gtg ggt cag ctt cct ctg cag aag	288
Phe Lys Ala Ile Leu Val Gly Gln Val Gly Gln Leu Pro Leu Gln Lys	
85 90 95	
aag ctt aag agt ggt aga act gtc act ctc ttc tct gta gga act ggt	336
Lys Leu Lys Ser Gly Arg Thr Val Thr Leu Phe Ser Val Gly Thr Gly	
100 105 110	
ggg atc agg aac aac cgg aga ccg ctt att aac gaa gat ccg aga gag	384
Gly Ile Arg Asn Asn Arg Arg Pro Leu Ile Asn Glu Asp Pro Arg Glu	
115 120 125	
tat gcg agc cgg tct gcg gtg cag tgg cac cgt gtc tct gtt tac cct	432
Tyr Ala Ser Arg Ser Ala Val Gln Trp His Arg Val Ser Val Tyr Pro	
130 135 140	
gaa cgc ttg gca gat ctt gtg ttg aag aat gtt gaa ccc ggt act gtt	480
Glu Arg Leu Ala Asp Leu Val Leu Lys Asn Val Glu Pro Gly Thr Val	
145 150 155 160	
atc tac tta gag ggt aat ctg gag acg aag ata ttc act gat cct gtc	528
Ile Tyr Leu Glu Gly Asn Leu Glu Thr Lys Ile Phe Thr Asp Pro Val	
165 170 175	

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act ggt ttg gtt cga cgt ata aga gaa gta gca att cgt aga aac ggc 576
 Thr Gly Leu Val Arg Arg Ile Arg Glu Val Ala Ile Arg Arg Asn Gly
 180 185 190

cga gtt gtg ttt ttg gga aaa gcc ggt gat atg cag caa ccg agt tct 624
 Arg Val Val Phe Leu Gly Lys Ala Gly Asp Met Gln Gln Pro Ser Ser
 195 200 205

gct gag ctt aga ggc gtt ggc tac tac tga 654
 Ala Glu Leu Arg Gly Val Gly Tyr Tyr
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<210> 36

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<213> Arabidopsis thaliana

<400> 36

Met Ala Asn Ser Met Ala Thr Leu Ser Arg Arg Leu Tyr Arg Ser Leu
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Asn Ile Thr Ser Pro Glu Asp Ser Asp Phe Asp Glu Leu Glu Ser Pro
 35 40 45

Ile Glu Pro Lys Ala Ser Asp Pro Val Ser Arg Phe Ser Gly Glu Glu
 50 55 60

Arg Val Met Glu Glu Arg Pro Leu Glu Asn Gly Leu Asp Ser Gly Ile
 65 70 75 80

Phe Lys Ala Ile Leu Val Gly Gln Val Gly Gln Leu Pro Leu Gln Lys
 85 90 95

Lys Leu Lys Ser Gly Arg Thr Val Thr Leu Phe Ser Val Gly Thr Gly
 100 105 110

Gly Ile Arg Asn Asn Arg Arg Pro Leu Ile Asn Glu Asp Pro Arg Glu
 115 120 125

Tyr Ala Ser Arg Ser Ala Val Gln Trp His Arg Val Ser Val Tyr Pro
 130 135 140

Glu Arg Leu Ala Asp Leu Val Leu Lys Asn Val Glu Pro Gly Thr Val
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145 150 155 160

Ile Tyr Leu Glu Gly Asn Leu Glu Thr Lys Ile Phe Thr Asp Pro Val
165 170 175

Thr Gly Leu Val Arg Arg Ile Arg Glu Val Ala Ile Arg Arg Asn Gly
180 185 190

Arg Val Val Phe Leu Gly Lys Ala Gly Asp Met Gln Gln Pro Ser Ser
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Ala Glu Leu Arg Gly Val Gly Tyr Tyr
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gag gag caa gag gaa caa gat gtt gac att gag aac cag tat tat aac 96
Glu Glu Gln Glu Glu Gln Asp Val Asp Ile Glu Asn Gln Tyr Tyr Asn
20 25 30

tct aaa ggt atg gtt gag act gaa cct gaa gaa gca ctt tct gga ttt 144
Ser Lys Gly Met Val Glu Thr Glu Pro Glu Glu Ala Leu Ser Gly Phe
35 40 45

gct gag gtt gtt cag atg gaa cct gag aaa gct gac tgg ggt ttc aaa 192
Ala Glu Val Val Gln Met Glu Pro Glu Lys Ala Asp Trp Gly Phe Lys
50 55 60

gct ctt aag cag act gtg aag atc tat tat cgt cta ggt aaa tac aaa 240
Ala Leu Lys Gln Thr Val Lys Ile Tyr Tyr Arg Leu Gly Lys Tyr Lys
65 70 75 80

gaa atg atg gaa gcc tat aca gag atg ctt aca tat atc aag tca gca 288
Glu Met Met Glu Ala Tyr Thr Glu Met Leu Thr Tyr Ile Lys Ser Ala
85 90 95

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gtc	acc	agg	aat	tac	agc	gaa	aaa	tgt	ata	aac	aat	atc	atg	gat	ttc	336
Val	Thr	Arg	Asn	Tyr	Ser	Glu	Lys	Cys	Ile	Asn	Asn	Ile	Met	Asp	Phe	
			100					105					110			
gtc	tct	gga	tct	gct	agc	cag	aac	act	ggc	ctg	ctg	caa	gag	ttc	tat	384
Val	Ser	Gly	Ser	Ala	Ser	Gln	Asn	Thr	Gly	Leu	Leu	Gln	Glu	Phe	Tyr	
		115					120					125				
cag	acc	act	ttg	aaa	gcc	ctt	gaa	gag	gct	aag	aat	gag	aga	ctc	tgg	432
Gln	Thr	Thr	Leu	Lys	Ala	Leu	Glu	Glu	Ala	Lys	Asn	Glu	Arg	Leu	Trp	
	130					135					140					
ttc	aag	aca	aat	ctt	aaa	ctc	tgc	aac	atc	tgg	ttt	gac	att	ggt	gaa	480
Phe	Lys	Thr	Asn	Leu	Lys	Leu	Cys	Asn	Ile	Trp	Phe	Asp	Ile	Gly	Glu	
145					150					155					160	
tac	aga	cgg	atg	act	aag	att	ctg	aag	gaa	ctc	cat	aag	tct	tgt	caa	528
Tyr	Arg	Arg	Met	Thr	Lys	Ile	Leu	Lys	Glu	Leu	His	Lys	Ser	Cys	Gln	
				165					170					175		
aag	gaa	gat	gga	act	gat	gat	cag	aag	aaa	gga	agt	cag	ctg	ctt	gag	576
Lys	Glu	Asp	Gly	Thr	Asp	Asp	Gln	Lys	Lys	Gly	Ser	Gln	Leu	Leu	Glu	
			180					185					190			
gtt	tat	gca	att	gaa	att	cag	att	tac	act	gaa	acg	aag	gac	aac	aaa	624
Val	Tyr	Ala	Ile	Glu	Ile	Gln	Ile	Tyr	Thr	Glu	Thr	Lys	Asp	Asn	Lys	
		195				200						205				
aag	ctt	aag	caa	cta	tac	cat	aag	gca	ctt	gcc	atc	aag	tct	gcc	ata	672
Lys	Leu	Lys	Gln	Leu	Tyr	His	Lys	Ala	Leu	Ala	Ile	Lys	Ser	Ala	Ile	
	210					215					220					
cct	cat	cct	agg	atc	atg	ggt	ata	atc	cgc	gag	tgt	ggt	gga	aaa	atg	720
Pro	His	Pro	Arg	Ile	Met	Gly	Ile	Ile	Arg	Glu	Cys	Gly	Gly	Lys	Met	
225					230					235					240	
cac	atg	gca	gaa	cgt	cag	tgg	gaa	gaa	gca	gcg	aca	gac	ttc	ttt	gag	768
His	Met	Ala	Glu	Arg	Gln	Trp	Glu	Glu	Ala	Ala	Thr	Asp	Phe	Phe	Glu	
				245					250					255		
gct	ttt	aaa	aat	tac	gat	gaa	gct	ggc	aac	caa	aga	cgt	ata	cag	tgc	816
Ala	Phe	Lys	Asn	Tyr	Asp	Glu	Ala	Gly	Asn	Gln	Arg	Arg	Ile	Gln	Cys	
			260					265					270			
ctg	aag	tat	ctt	gtt	ctg	gcg	aat	atg	ctg	atg	gag	tca	gaa	gtg	aat	864
Leu	Lys	Tyr	Leu	Val	Leu	Ala	Asn	Met	Leu	Met	Glu	Ser	Glu	Val	Asn	
		275					280					285				
ccg	ttt	gat	ggc	caa	gag	gca	aag	ccg	tac	aaa	aac	gac	cct	gag	att	912
Pro	Phe	Asp	Gly	Gln	Glu	Ala	Lys	Pro	Tyr	Lys	Asn	Asp	Pro	Glu	Ile	
	290					295					300					
ttg	gca	atg	aca	aat	ttg	atc	gca	gca	tat	caa	cga	aat	gag	atc	ata	960
Leu	Ala	Met	Thr	Asn	Leu	Ile	Ala	Ala	Tyr	Gln	Arg	Asn	Glu	Ile	Ile	
305					310					315					320	
gag	ttt	gag	aga	ata	cta	aag	agt	aac	cgg	agg	acg	ata	atg	gat	gat	1008
Glu	Phe	Glu	Arg	Ile	Leu	Lys	Ser	Asn	Arg	Arg	Thr	Ile	Met	Asp	Asp	
				325					330					335		
cca	ttc	atc	aga	aac	tac	atg	gaa	gat	ctg	ctg	aag	aaa	gtg	aga	aca	1056
Pro	Phe	Ile	Arg	Asn	Tyr	Met	Glu	Asp	Leu	Leu	Lys	Lys	Val	Arg	Thr	

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340	345	350	
caa gtg tta ctg aag ctg att aag cca tac aca aag ata ggg att ccg Gln Val Leu Leu Lys Leu Ile Lys Pro Tyr Thr Lys Ile Gly Ile Pro 355 360 365			1104
ttc ata tca aag gaa ctg aac gtg cca gag acg gat gtg acg gag tta Phe Ile Ser Lys Glu Leu Asn Val Pro Glu Thr Asp Val Thr Glu Leu 370 375 380			1152
cta gtg tcg ctg ata ctc gac agc aga atc gat ggt cac att gat gaa Leu Val Ser Leu Ile Leu Asp Ser Arg Ile Asp Gly His Ile Asp Glu 385 390 395 400			1200
atg aac cgt tac tta ctg aga ggc gac agt ggc aat gga agg aag ttg Met Asn Arg Tyr Leu Leu Arg Gly Asp Ser Gly Asn Gly Arg Lys Leu 405 410 415			1248
cat aag gcg gtt gat aaa tgg aac tca cag ctc aag tct ctt tct tca His Lys Ala Val Asp Lys Trp Asn Ser Gln Leu Lys Ser Leu Ser Ser 420 425 430			1296
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<210> 38

<211> 439

<212> PRT

<213> Arabidopsis thaliana

<400> 38

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35 40 45

Ala Glu Val Val Gln Met Glu Pro Glu Lys Ala Asp Trp Gly Phe Lys
50 55 60

Ala Leu Lys Gln Thr Val Lys Ile Tyr Tyr Arg Leu Gly Lys Tyr Lys
65 70 75 80

Glu Met Met Glu Ala Tyr Thr Glu Met Leu Thr Tyr Ile Lys Ser Ala
85 90 95

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Val Thr Arg Asn Tyr Ser Glu Lys Cys Ile Asn Asn Ile Met Asp Phe
 100 105 110

Val Ser Gly Ser Ala Ser Gln Asn Thr Gly Leu Leu Gln Glu Phe Tyr
 115 120 125

Gln Thr Thr Leu Lys Ala Leu Glu Glu Ala Lys Asn Glu Arg Leu Trp
 130 135 140

Phe Lys Thr Asn Leu Lys Leu Cys Asn Ile Trp Phe Asp Ile Gly Glu
 145 150 155 160

Tyr Arg Arg Met Thr Lys Ile Leu Lys Glu Leu His Lys Ser Cys Gln
 165 170 175

Lys Glu Asp Gly Thr Asp Asp Gln Lys Lys Gly Ser Gln Leu Leu Glu
 180 185 190

Val Tyr Ala Ile Glu Ile Gln Ile Tyr Thr Glu Thr Lys Asp Asn Lys
 195 200 205

Lys Leu Lys Gln Leu Tyr His Lys Ala Leu Ala Ile Lys Ser Ala Ile
 210 215 220

Pro His Pro Arg Ile Met Gly Ile Ile Arg Glu Cys Gly Gly Lys Met
 225 230 235 240

His Met Ala Glu Arg Gln Trp Glu Glu Ala Ala Thr Asp Phe Phe Glu
 245 250 255

Ala Phe Lys Asn Tyr Asp Glu Ala Gly Asn Gln Arg Arg Ile Gln Cys
 260 265 270

Leu Lys Tyr Leu Val Leu Ala Asn Met Leu Met Glu Ser Glu Val Asn
 275 280 285

Pro Phe Asp Gly Gln Glu Ala Lys Pro Tyr Lys Asn Asp Pro Glu Ile
 290 295 300

Leu Ala Met Thr Asn Leu Ile Ala Ala Tyr Gln Arg Asn Glu Ile Ile
 305 310 315 320

Glu Phe Glu Arg Ile Leu Lys Ser Asn Arg Arg Thr Ile Met Asp Asp
 325 330 335

Pro Phe Ile Arg Asn Tyr Met Glu Asp Leu Leu Lys Lys Val Arg Thr
 340 345 350

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Gln Val Leu Leu Lys Leu Ile Lys Pro Tyr Thr Lys Ile Gly Ile Pro
 355 360 365

Phe Ile Ser Lys Glu Leu Asn Val Pro Glu Thr Asp Val Thr Glu Leu
 370 375 380

Leu Val Ser Leu Ile Leu Asp Ser Arg Ile Asp Gly His Ile Asp Glu
 385 390 395 400

Met Asn Arg Tyr Leu Leu Arg Gly Asp Ser Gly Asn Gly Arg Lys Leu
 405 410 415

His Lys Ala Val Asp Lys Trp Asn Ser Gln Leu Lys Ser Leu Ser Ser
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Asn Ile Thr Ser Arg Val Cys
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<210> 39

<211> 1158

<212> DNA

<213> Arabidopsis thaliana

<220>

<221> CDS

<222> (1)..(1158)

<223>

<400> 39

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 1 5 10 15

ctc aca atc ttg tcc gga gcc gac caa gcc ttg gct tac gtc aag aaa 96
 Leu Thr Ile Leu Ser Gly Ala Asp Gln Ala Leu Ala Tyr Val Lys Lys
 20 25 30

cca cat gtg agc caa cgc aac aaa acg gcg tta gca gcc gtc gcc gga 144
 Pro His Val Ser Gln Arg Asn Lys Thr Ala Leu Ala Ala Val Ala Gly
 35 40 45

aga gga gga gga aaa gag atg ttg aaa ggg agg aag cag acg agt ggt 192
 Arg Gly Gly Gly Lys Glu Met Leu Lys Gly Arg Lys Gln Thr Ser Gly
 50 55 60

tgt aac ttg ttt caa ggg aga tgg gtt ttc gat gct tct tac cct ttc 240
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Cys 65	Asn	Leu	Phe	Gln	Gly 70	Arg	Trp	Val	Phe	Asp 75	Ala	Ser	Tyr	Pro	Phe 80	
tac Tyr	gat Asp	tca Ser	tcc Ser	acg Thr 85	tgc Cys	cct Pro	ttc Phe	atc Ile	gac Asp 90	ggg Gly	gag Glu	ttc Phe	gac Asp	tgt Cys 95	cct Leu	288
aaa Lys	ttc Phe	ggc Gly	cga Arg 100	cca Pro	gac Asp	aaa Lys	cag Gln	ttc Phe 105	ctt Leu	aag Lys	tac Tyr	tct Ser	tgg Trp 110	cag Gln	cct Pro	336
gat Asp	tca Ser	tgc Cys 115	acc Thr	gtc Val	cca Pro	agg Arg	ttt Phe 120	gat Asp	ggg Gly	gaa Glu	gcg Ala	ttt Phe 125	ttg Leu	aag Lys	aaa Lys	384
tgg Trp	aga Arg 130	ggg Gly	aaa Lys	cga Arg	gtg Val	atg Met 135	ttc Phe	gtg Val	ggg Gly	gac Asp	tca Ser 140	ctg Leu	agt Ser	cta Leu	aac Asn	432
atg Met 145	tgg Trp	gaa Glu	tcg Ser	ttg Leu	gca Ala 150	tgt Cys	atg Met	ata Ile	cat His	tcg Ser 155	tcg Ser	gtt Val	cca Pro	aac Asn	act Thr 160	480
aag Lys	acc Thr	act Thr	ttt Phe	ctc Leu 165	aag Lys	cga Arg	acc Thr	cca Pro	ctc Leu 170	tcc Ser	tct Ser	ctc Leu	act Thr	ttc Phe 175	cag Gln	528
gaa Glu	tat Tyr	gac Asp	gtc Val 180	aca Thr	cta Leu	ttc Phe	cta Leu	tac Tyr 185	cga Arg	aca Thr	cca Pro	tac Tyr	cta Leu 190	gtg Val	gac Asp	576
atc Ile	tcc Ser	aaa Lys 195	gaa Glu	agt Ser	gtc Val	ggg Gly	cgt Arg 200	gtg Val	ctt Leu	aac Asn	ctt Leu	gga Gly 205	gcc Ala	att Ile	gaa Glu	624
gat Asp	gga Gly 210	gct Ala	gat Asp	gct Ala	tgg Trp	aaa Lys 215	aat Asn	atg Met	gac Asp	ctc Leu	ctc Leu 220	gtc Val	ttc Phe	aat Asn	tct Ser	672
tgg Trp 225	cac His	tgg Trp	tgg Trp	act Thr 230	cac His	aca Thr	gga Gly	gta Val	cag Gln	tct Ser 235	caa Gln	ggg Gly	tgg Trp	gat Asp	ttt Phe 240	720
ata Ile	aga Arg	gat Asp	ggg Gly	tct Ser 245	tca Ser	ctg Leu	atg Met	aga Arg	gac Asp 250	atg Met	gac Asp	cgc Arg	ctt Leu	gat Asp 255	gct Ala	768
ttc Phe	aac Asn	aaa Lys	gga Gly 260	ctc Leu	acc Thr	act Thr	tgg Trp	ggg Gly 265	caa Gln	tgg Trp	gtt Val	gat Asp	caa Gln 270	aat Asn	gtt Val	816
aat Asn	gtt Val	tcg Ser 275	caa Gln	acc Thr	cga Arg	gtc Val	ttc Phe 280	ttc Phe	caa Gln	ggc Gly	att Ile	tct Ser 285	ccc Pro	act Thr	cac His	864
tac Tyr	atg Met 290	gga Gly	agg Arg	gaa Glu	tgg Trp	aac Asn 295	gag Glu	ccg Pro	agg Arg	aaa Lys	act Thr 300	tgc Cys	aac Asn	ggg Gly	cag Gln	912
atg Met 305	caa Gln	ccg Pro	ttg Leu	acc Thr	gga Gly 310	tca Ser	aca Thr	tac Tyr	cca Pro	ggg Gly 315	ggg Gly	tca Ser	ctt Leu	cct Pro	gca Ala 320	960

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<211> 385

<212> PRT

<213> *Arabidopsis thaliana*

<400> 40

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Pro His Val Ser Gln Arg Asn Lys Thr Ala Leu Ala Ala Val Ala Gly
35 40 45

Arg Gly Gly Gly Lys Glu Met Leu Lys Gly Arg Lys Gln Thr Ser Gly
50 55 60

Cys Asn Leu Phe Gln Gly Arg Trp Val Phe Asp Ala Ser Tyr Pro Phe
65 70 75 80

Tyr Asp Ser Ser Thr Cys Pro Phe Ile Asp Gly Glu Phe Asp Cys Leu
85 90 95

Lys Phe Gly Arg Pro Asp Lys Gln Phe Leu Lys Tyr Ser Trp Gln Pro
100 105 110

Asp Ser Cys Thr Val Pro Arg Phe Asp Gly Glu Ala Phe Leu Lys Lys
115 120 125

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Trp Arg Gly Lys Arg Val Met Phe Val Gly Asp Ser Leu Ser Leu Asn
 130 135 140

Met Trp Glu Ser Leu Ala Cys Met Ile His Ser Ser Val Pro Asn Thr
 145 150 155 160

Lys Thr Thr Phe Leu Lys Arg Thr Pro Leu Ser Ser Leu Thr Phe Gln
 165 170 175

Glu Tyr Asp Val Thr Leu Phe Leu Tyr Arg Thr Pro Tyr Leu Val Asp
 180 185 190

Ile Ser Lys Glu Ser Val Gly Arg Val Leu Asn Leu Gly Ala Ile Glu
 195 200 205

Asp Gly Ala Asp Ala Trp Lys Asn Met Asp Leu Leu Val Phe Asn Ser
 210 215 220

Trp His Trp Trp Thr His Thr Gly Val Gln Ser Gln Gly Trp Asp Phe
 225 230 235 240

Ile Arg Asp Gly Ser Ser Leu Met Arg Asp Met Asp Arg Leu Asp Ala
 245 250 255

Phe Asn Lys Gly Leu Thr Thr Trp Gly Gln Trp Val Asp Gln Asn Val
 260 265 270

Asn Val Ser Gln Thr Arg Val Phe Phe Gln Gly Ile Ser Pro Thr His
 275 280 285

Tyr Met Gly Arg Glu Trp Asn Glu Pro Arg Lys Thr Cys Asn Gly Gln
 290 295 300

Met Gln Pro Leu Thr Gly Ser Thr Tyr Pro Gly Gly Ser Leu Pro Ala
 305 310 315 320

Ala Ser Ile Val Ser Arg Val Leu Ser Thr Met Arg Thr Pro Val Tyr
 325 330 335

Leu Leu Asp Ile Thr Thr Leu Ser Gln Leu Arg Lys Asp Ala His Pro
 340 345 350

Ser Thr Tyr Gly Gly Asp Gly Gly Thr Asp Cys Ser His Trp Cys Leu
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Pro Gly Leu Pro Asp Thr Trp Asn Gln Leu Leu Tyr Ala Ala Leu Ser
 Page 130

370

375

Met
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<210> 41

<211> 1194

<212> DNA

<213> *Arabidopsis thaliana*

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<221> CDS

<222> (1)..(1194)

<223>

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aaa	aga	gaa	tct	ctc	ata	att	cca	tcg	gtt	att	tgc	tca	ttt	cct	ttc	96
Lys	Arg	Glu	Ser	Leu	Ile	Ile	Pro	Ser	Val	Ile	Cys	Ser	Phe	Pro	Phe	
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acc	tct	tct	tcg	ttc	cgt	cca	aag	caa	acc	cag	aaa	ctg	aag	cgt	ctg	144
Thr	Ser	Ser	Ser	Phe	Arg	Pro	Lys	Gln	Thr	Gln	Lys	Leu	Lys	Arg	Leu	
			35				40					45				

gtt	caa	ttt	tgc	gct	cct	tac	gag	gtc	gga	ggg	gga	tac	acc	gat	gaa	192
Val	Gln	Phe	Cys	Ala	Pro	Tyr	Glu	Val	Gly	Gly	Gly	Tyr	Thr	Asp	Glu	
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gaa	ttg	ttc	gaa	aga	tac	gga	act	cag	caa	aat	caa	act	aat	gtc	aaa	240
Glu	Leu	Phe	Glu	Arg	Tyr	Gly	Thr	Gln	Gln	Asn	Gln	Thr	Asn	Val	Lys	
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gat	aaa	tta	gat	cca	gct	gag	tat	gaa	gct	ttg	ctt	aaa	gga	ggc	gaa	288
Asp	Lys	Leu	Asp	Pro	Ala	Glu	Tyr	Glu	Ala	Leu	Leu	Lys	Gly	Gly	Glu	
				85					90					95		

caa	gtg	aca	tcc	gtt	ctt	gaa	gaa	atg	att	acc	ctc	ttg	gaa	gat	atg	336
Gln	Val	Thr	Ser	Val	Leu	Glu	Glu	Met	Ile	Thr	Leu	Leu	Glu	Asp	Met	
			100					105					110			

aag	atg	aat	gaa	gca	tct	gag	aat	gtt	gct	gta	gaa	ttg	gct	gca	caa	384
Lys	Met	Asn	Glu	Ala	Ser	Glu	Asn	Val	Ala	Val	Glu	Leu	Ala	Ala	Gln	
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gga	gtt	ata	ggg	aaa	agg	gtc	gat	gaa	atg	gaa	tca	ggg	ttt	atg	atg	432
Gly	Val	Ile	Gly	Lys	Arg	Val	Asp	Glu	Met	Glu	Ser	Gly	Phe	Met	Met	
	130					135					140					

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aga Arg	aag Lys	tct Ser	tta Leu 165	cta Leu	gag Glu	gtc Val	gtc Val	aag Lys	gag Glu 170	act Thr	gtc Val	tta Leu	tct Ser	cat His 175	ctc Leu	528
acc Thr	aag Lys	aaa Lys	tgc Cys 180	cct Pro	cct Pro	cat His	gtc Val	cag Gln 185	gtg Val	att Ile	ggc Gly	tta Leu	ctc Leu 190	tgt Cys	aga Arg	576
acc Thr	ccg Pro	aaa Lys 195	aag Lys	gaa Glu	agt Ser	aga Arg	cat His 200	gag Glu	ctt Leu	ctg Leu	cgt Arg	agg Arg 205	gtg Val	gct Ala	gca Ala	624
ggc Gly	ggc Gly 210	ggg Gly	gct Ala	ttt Phe	gaa Glu	agt Ser 215	gag Glu	aac Asn	ggc Gly	act Thr	aaa Lys 220	ctt Leu	cat His	ata Ile	ccc Pro	672
gga Gly 225	gca Ala	aat Asn	ctg Leu	aat Asn	gac Asp 230	ata Ile	gct Ala	aat Asn	caa Gln	gct Ala 235	gat Asp	gac Asp	ttg Leu	cta Leu	gag Glu 240	720
act Thr	atg Met	gaa Glu	aca Thr	agg Arg 245	cca Pro	gct Ala	att Ile	ccg Pro	gat Asp 250	cga Arg	aaa Lys	cta Leu	cta Leu	gcg Ala 255	agg Arg	768
ctt Leu	gtt Val	ttg Leu	att Ile 260	aga Arg	gag Glu	gaa Glu	gcc Ala	cgg Arg 265	aac Asn	atg Met	atg Met	gga Gly	gga Gly	ggc Gly	ata Ile	816
ctt Leu	gat Asp	gaa Glu 275	aga Arg	aat Asn	gac Asp	cga Arg	ggc Gly 280	ttc Phe	act Thr	act Thr	ctt Leu	cct Pro 285	gaa Glu	tca Ser	gag Glu	864
gtg Val	aat Asn 290	ttc Phe	tta Leu	gcc Ala	aaa Lys	ttg Leu 295	gta Val	gct Ala	ctg Leu	aaa Lys	cct Pro 300	gga Gly	aag Lys	act Thr	gtg Val	912
cag Gln 305	cag Gln	atg Met	atc Ile	cag Gln	aat Asn 310	gta Val	atg Met	caa Gln	ggg Gly	aaa Lys 315	gat Asp	gaa Glu	ggc Gly	gca Ala	gat Asp 320	960
aat Asn	ctt Leu	agc Ser	aaa Lys	gaa Glu 325	tcc Ser	gat Asp	tct Ser	tct Ser	acc Thr 330	gaa Glu	gga Gly	aga Arg	aaa Lys	cca Pro 335	agt Ser	1008
gga Gly	tta Leu	aaa Lys	gga Gly 340	agg Arg	gga Gly	agc Ser	gtt Val	aca Thr 345	gga Gly	aga Arg	aaa Lys	ccg Pro	tta Leu 350	cca Pro	gta Val	1056
aga Arg	cca Pro	gga Gly 355	atg Met	ttt Phe	cta Leu	gaa Glu	act Thr 360	gtc Val	aca Thr	aag Lys	gta Val	ctg Leu 365	gga Gly	agt Ser	ata Ile	1104
tac Tyr	tcg Ser 370	ggc Gly	aat Asn	gcc Ala	tcc Ser	ggg Gly 375	ata Ile	aca Thr	gca Ala	caa Gln	cat His 380	cta Leu	gaa Glu	tgg Trp	gtt Val	1152
cac His	caa Gln	aaa Lys	acc Thr	ctc Leu	caa Gln	gtt Val	ctt Leu	gaa Glu	gaa Glu	atc Ile	gct Ala	tat Tyr	tag			1194

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<211> 397

<212> PRT

<213> Arabidopsis thaliana

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35 40 45

Val Gln Phe Cys Ala Pro Tyr Glu Val Gly Gly Gly Tyr Thr Asp Glu
50 55 60

Glu Leu Phe Glu Arg Tyr Gly Thr Gln Gln Asn Gln Thr Asn Val Lys
65 70 75 80

Asp Lys Leu Asp Pro Ala Glu Tyr Glu Ala Leu Leu Lys Gly Gly Glu
85 90 95

Gln Val Thr Ser Val Leu Glu Glu Met Ile Thr Leu Leu Glu Asp Met
100 105 110

Lys Met Asn Glu Ala Ser Glu Asn Val Ala Val Glu Leu Ala Ala Gln
115 120 125

Gly Val Ile Gly Lys Arg Val Asp Glu Met Glu Ser Gly Phe Met Met
130 135 140

Ala Leu Asp Tyr Met Ile Gln Leu Ala Asp Lys Asp Gln Asp Glu Lys
145 150 155 160

Arg Lys Ser Leu Leu Glu Val Val Lys Glu Thr Val Leu Ser His Leu
165 170 175

Thr Lys Lys Cys Pro Pro His Val Gln Val Ile Gly Leu Leu Cys Arg
180 185 190

Thr Pro Lys Lys Glu Ser Arg His Glu Leu Leu Arg Arg Val Ala Ala
 195 200 205

Gly Gly Gly Ala Phe Glu Ser Glu Asn Gly Thr Lys Leu His Ile Pro
 210 215 220

Gly Ala Asn Leu Asn Asp Ile Ala Asn Gln Ala Asp Asp Leu Leu Glu
 225 230 235 240

Thr Met Glu Thr Arg Pro Ala Ile Pro Asp Arg Lys Leu Leu Ala Arg
 245 250 255

Leu Val Leu Ile Arg Glu Glu Ala Arg Asn Met Met Gly Gly Gly Ile
 260 265 270

Leu Asp Glu Arg Asn Asp Arg Gly Phe Thr Thr Leu Pro Glu Ser Glu
 275 280 285

Val Asn Phe Leu Ala Lys Leu Val Ala Leu Lys Pro Gly Lys Thr Val
 290 295 300

Gln Gln Met Ile Gln Asn Val Met Gln Gly Lys Asp Glu Gly Ala Asp
 305 310 315 320

Asn Leu Ser Lys Glu Ser Asp Ser Ser Thr Glu Gly Arg Lys Pro Ser
 325 330 335

Gly Leu Lys Gly Arg Gly Ser Val Thr Gly Arg Lys Pro Leu Pro Val
 340 345 350

Arg Pro Gly Met Phe Leu Glu Thr Val Thr Lys Val Leu Gly Ser Ile
 355 360 365

Tyr Ser Gly Asn Ala Ser Gly Ile Thr Ala Gln His Leu Glu Trp Val
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His Gln Lys Thr Leu Gln Val Leu Glu Glu Ile Ala Tyr
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<210> 43

<211> 2451

<212> DNA

<213> Arabidopsis thaliana

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<222> (1)..(2451)

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Leu	Gln	Ser	Ile	Gly	Ser	Val	Ile	Arg	Glu	Phe	Ser	Ala	Ser	Ala	Asn	
			20					25					30			

gct	ttg	caa	gac	tgt	tgg	aaa	aat	ggg	aat	gaa	agt	aaa	gag	att	gat	144
Ala	Leu	Gln	Asp	Cys	Trp	Lys	Asn	Gly	Asn	Glu	Ser	Lys	Glu	Ile	Asp	
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gat	ggt	cac	aca	ctt	ttc	aga	tat	tgc	act	aat	ttg	caa	tca	gcc	aaa	192
Asp	Val	His	Thr	Leu	Phe	Arg	Tyr	Cys	Thr	Asn	Leu	Gln	Ser	Ala	Lys	
	50					55					60					

tgt	ctc	cac	gca	cgt	ctc	ggt	gtc	tcc	aaa	caa	atc	caa	aat	ggt	tgt	240
Cys	Leu	His	Ala	Arg	Leu	Val	Val	Ser	Lys	Gln	Ile	Gln	Asn	Val	Cys	
65					70					75					80	

atc	tct	gct	aaa	ctt	ggt	aat	ctc	tat	tgt	tac	ctt	ggc	aat	gtc	gca	288
Ile	Ser	Ala	Lys	Leu	Val	Asn	Leu	Tyr	Cys	Tyr	Leu	Gly	Asn	Val	Ala	
				85					90					95		

ttg	gct	agg	cac	acg	ttt	gat	cat	atc	cag	aac	aga	gat	gta	tac	gct	336
Leu	Ala	Arg	His	Thr	Phe	Asp	His	Ile	Gln	Asn	Arg	Asp	Val	Tyr	Ala	
			100					105					110			

tgg	aat	ttg	atg	att	tct	ggt	tat	ggc	cgt	gcg	gga	aat	tct	tca	gaa	384
Trp	Asn	Leu	Met	Ile	Ser	Gly	Tyr	Gly	Arg	Ala	Gly	Asn	Ser	Ser	Glu	
		115					120					125				

gtg	att	agg	tgt	ttt	agt	ctc	ttt	atg	ttg	agt	tct	gga	ctt	aca	cct	432
Val	Ile	Arg	Cys	Phe	Ser	Leu	Phe	Met	Leu	Ser	Ser	Gly	Leu	Thr	Pro	
	130					135					140					

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Asp	Tyr	Arg	Thr	Phe	Pro	Ser	Val	Leu	Lys	Ala	Cys	Arg	Thr	Val	Ile	
145					150					155					160	

gat	ggg	aat	aag	att	cat	tgc	ttg	gct	ttg	aag	ttt	ggg	ttt	atg	tgg	528
Asp	Gly	Asn	Lys	Ile	His	Cys	Leu	Ala	Leu	Lys	Phe	Gly	Phe	Met	Trp	
				165					170					175		

gat	gtc	tat	ggt	gct	gcc	tcg	ttg	att	cat	ttg	tac	tct	cga	tat	aaa	576
Asp	Val	Tyr	Val	Ala	Ala	Ser	Leu	Ile	His	Leu	Tyr	Ser	Arg	Tyr	Lys	
			180					185					190			

gct	gtg	ggg	aat	gca	cgt	ata	ctg	ttt	gat	gaa	atg	cct	gta	aga	gat	624
Ala	Val	Gly	Asn	Ala	Arg	Ile	Leu	Phe	Asp	Glu	Met	Pro	Val	Arg	Asp	
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atg	ggg	tct	tgg	aat	gca	atg	att	tct	ggg	tat	tgt	caa	agc	gga	aat	672

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225					230				235						240	
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Asn	Arg	Gly	Val	Thr	Ile	His	Ser	Tyr	Ser	Ile	Lys	His	Gly	Leu	Glu	
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Ser	Glu	Leu	Phe	Val	Ser	Asn	Lys	Leu	Ile	Asp	Leu	Tyr	Ala	Glu	Phe	
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	290					295					300					
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Asp	Leu	Ile	Ser	Trp	Asn	Ser	Ile	Ile	Lys	Ala	Tyr	Glu	Leu	Asn	Glu	
305					310					315					320	
cag	ccg	ctt	aga	gcg	att	tcg	ttg	ttt	cag	gag	atg	cgg	ttg	agt	aga	1008
Gln	Pro	Leu	Arg	Ala	Ile	Ser	Leu	Phe	Gln	Glu	Met	Arg	Leu	Ser	Arg	
				325					330					335		
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Ile	Gln	Pro	Asp	Cys	Leu	Thr	Leu	Ile	Ser	Leu	Ala	Ser	Ile	Leu	Ser	
			340					345					350			
cag	tta	ggg	gac	att	cgt	gct	tgt	aga	tct	gtg	cag	ggt	ttc	act	ttg	1104
Gln	Leu	Gly	Asp	Ile	Arg	Ala	Cys	Arg	Ser	Val	Gln	Gly	Phe	Thr	Leu	
		355					360					365				
agg	aaa	ggc	tgg	ttc	ttg	gaa	gat	att	acc	atc	ggg	aat	gct	gtt	gtg	1152
Arg	Lys	Gly	Trp	Phe	Leu	Glu	Asp	Ile	Thr	Ile	Gly	Asn	Ala	Val	Val	
	370					375					380					
gtt	atg	tat	gca	aaa	cta	ggc	ctt	gta	gat	tca	gca	aga	gca	gtg	ttt	1200
Val	Met	Tyr	Ala	Lys	Leu	Gly	Leu	Val	Asp	Ser	Ala	Arg	Ala	Val	Phe	
385					390					395					400	
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Asn	Trp	Leu	Pro	Asn	Thr	Asp	Val	Ile	Ser	Trp	Asn	Thr	Ile	Ile	Ser	
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ggt	tat	gct	caa	aac	ggt	ttt	gct	agt	gaa	gca	att	gaa	atg	tat	aac	1296
Gly	Tyr	Ala	Gln	Asn	Gly	Phe	Ala	Ser	Glu	Ala	Ile	Glu	Met	Tyr	Asn	
			420					425					430			
ata	atg	gag	gaa	gaa	ggt	gaa	ata	gcc	gct	aac	caa	ggg	act	tgg	gtg	1344
Ile	Met	Glu	Glu	Glu	Gly	Glu	Ile	Ala	Ala	Asn	Gln	Gly	Thr	Trp	Val	
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agt	gtt	ttg	ccc	gct	tgt	tcg	cag	gct	gga	gcg	ttg	cgt	caa	ggt	atg	1392
Ser	Val	Leu	Pro	Ala	Cys	Ser	Gln	Ala	Gly	Ala	Leu	Arg	Gln	Gly	Met	
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Val	Val	Thr	Ser	Leu	Ala	Asp	Met	Tyr	Gly	Lys	Cys	Gly	Arg	Leu	Glu	
				485					490					495		
gat	gcc	ctc	tct	ttg	ttt	tat	caa	atc	cca	aga	gtc	aac	tct	gtg	cca	1536
Asp	Ala	Leu	Ser	Leu	Phe	Tyr	Gln	Ile	Pro	Arg	Val	Asn	Ser	Val	Pro	
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tgg	aac	acc	cta	ata	gcg	tgt	cac	ggg	ttt	cac	ggg	cat	ggc	gag	aaa	1584
Trp	Asn	Thr	Leu	Ile	Ala	Cys	His	Gly	Phe	His	Gly	His	Gly	Glu	Lys	
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gca	gtg	atg	ctg	ttc	aaa	gaa	atg	ctg	gat	gaa	gga	gtg	aag	cca	gat	1632
Ala	Val	Met	Leu	Phe	Lys	Glu	Met	Leu	Asp	Glu	Gly	Val	Lys	Pro	Asp	
	530					535					540					
cac	att	aca	ttt	gtg	act	ctg	tta	tcg	gct	tgt	agc	cat	tct	ggg	tta	1680
His	Ile	Thr	Phe	Val	Thr	Leu	Leu	Ser	Ala	Cys	Ser	His	Ser	Gly	Leu	
545					550					555					560	
gta	gac	gag	ggg	caa	tgg	tgc	ttt	gag	atg	atg	caa	acg	gat	tat	ggg	1728
Val	Asp	Glu	Gly	Gln	Trp	Cys	Phe	Glu	Met	Met	Gln	Thr	Asp	Tyr	Gly	
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Ile	Thr	Pro	Ser	Leu	Lys	His	Tyr	Gly	Cys	Met	Val	Asp	Met	Tyr	Gly	
			580					585					590			
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Arg	Ala	Gly	Gln	Leu	Glu	Thr	Ala	Leu	Lys	Phe	Ile	Lys	Ser	Met	Ser	
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Val	His	Gly	Asn	Val	Asp	Leu	Gly	Lys	Ile	Ala	Ser	Glu	His	Leu	Phe	
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Glu	Val	Glu	Pro	Glu	His	Val	Gly	Tyr	His	Val	Leu	Leu	Ser	Asn	Met	
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Val	Asp	Asn	Lys	Val	Glu	Val	Phe	Tyr	Thr	Gly	Asn	Gln	Thr	His	Pro	
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gct att gca ttt gca ctt atc gcc act cct gca aag aca acg att cgg 2304
Ala Ile Ala Phe Ala Leu Ile Ala Thr Pro Ala Lys Thr Thr Ile Arg
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Ile Phe Lys Asn Leu Arg Val Cys Gly Asp Cys His Ser Val Thr Lys
770 775 780
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Phe Ile Ser Lys Ile Thr Glu Arg Glu Ile Ile Val Arg Asp Ser Asn
785 790 795 800
cgg ttt cat cat ttc aag aat gga gtc tgc tct tgc ggt gat tac tgg 2448
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Cys Leu His Ala Arg Leu Val Val Ser Lys Gln Ile Gln Asn Val Cys
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Ile Ser Ala Lys Leu Val Asn Leu Tyr Cys Tyr Leu Gly Asn Val Ala
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Asp Tyr Arg Thr Phe Pro Ser Val Leu Lys Ala Cys Arg Thr Val Ile
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Asp Val Tyr Val Ala Ala Ser Leu Ile His Leu Tyr Ser Arg Tyr Lys
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Ala Lys Glu Ala Leu Thr Leu Ser Asn Gly Leu Arg Ala Met Asp Ser
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Asn Arg Gly Val Thr Ile His Ser Tyr Ser Ile Lys His Gly Leu Glu
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Ser Glu Leu Phe Val Ser Asn Lys Leu Ile Asp Leu Tyr Ala Glu Phe
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Gly Arg Leu Arg Asp Cys Gln Lys Val Phe Asp Arg Met Tyr Val Arg
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Asp Leu Ile Ser Trp Asn Ser Ile Ile Lys Ala Tyr Glu Leu Asn Glu
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Ile Gln Pro Asp Cys Leu Thr Leu Ile Ser Leu Ala Ser Ile Leu Ser
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Ile Met Glu Glu Glu Gly Glu Ile Ala Ala Asn Gln Gly Thr Trp Val
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 Page 140

595

600

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Glu Val Glu Pro Glu His Val Gly Tyr His Val Leu Leu Ser Asn Met
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Tyr Ala Ser Ala Gly Lys Trp Glu Gly Val Asp Glu Ile Arg Ser Ile
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Ala His Gly Lys Gly Leu Arg Lys Thr Pro Gly Trp Ser Ser Met Glu
675 680 685

Val Asp Asn Lys Val Glu Val Phe Tyr Thr Gly Asn Gln Thr His Pro
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Ala Ile Ala Phe Ala Leu Ile Ala Thr Pro Ala Lys Thr Thr Ile Arg
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Ala	Thr	His	Asn	Arg	Lys	Leu	Lys	Glu	Leu	Ala	Thr	Ile	Arg	Ser	Lys	
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Gln	Phe	Ser	Ser	Val	Phe	Leu	Lys	Thr	Leu	Thr	Pro	Leu	Phe	Ile	Ala	
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gct	caa	cga	aga	acc	gct	gca	gca	gag	cgt	gtt	gtt	cga	ttc	gtg	gcg	288
Ala	Gln	Arg	Arg	Thr	Ala	Ala	Ala	Glu	Arg	Val	Val	Arg	Phe	Val	Ala	
				85					90					95		

gaa	ttc	gct	tgt	ctt	cgt	agt	aat	tca	gac	ggc	gac	tcc	gat	tgc	gac	336
Glu	Phe	Ala	Cys	Leu	Arg	Ser	Asn	Ser	Asp	Gly	Asp	Ser	Asp	Cys	Asp	
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Ile	Leu	Arg	Leu	Pro	Asp	Glu	Val	Glu	Val	Ala	Asp	Glu	Leu	Trp	Asp	
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Ile	Arg	Thr	Phe	Ala	Val	Arg	Ser	Leu	Ser	Arg	Phe	Val	Asn	Asp	Pro	
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gag	aat	agt	gac	att	ctt	gat	ttg	cta	ctt	gag	gtg	ctt	cct	ttg	gaa	624
Glu	Asn	Ser	Asp	Ile	Leu	Asp	Leu	Leu	Leu	Glu	Val	Leu	Pro	Leu	Glu	

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Trp	Ala	Glu	Ala	Val	Ser	Lys	Leu	Ala	Lys	Lys	Val	His	Ala	Ala	Pro	
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Ala Thr His Asn Arg Lys Leu Lys Glu Leu Ala Thr Ile Arg Ser Lys
 35 40 45

Leu Ser Ser Ser Glu Ser Glu Ser Glu Ser Val Ser Ser Ser Ile Leu
 50 55 60

Gln Phe Ser Ser Val Phe Leu Lys Thr Leu Thr Pro Leu Phe Ile Ala
 65 70 75 80

Ala Gln Arg Arg Thr Ala Ala Ala Glu Arg Val Val Arg Phe Val Ala
 85 90 95

Glu Phe Ala Cys Leu Arg Ser Asn Ser Asp Gly Asp Ser Asp Cys Asp
 Page 146

100

105

110

Glu Phe Leu₁₁₅ Glu Glu Phe Leu Lys₁₂₀ Phe Leu Val Ala Gly₁₂₅ Ser Val Ala

Ala Asn₁₃₀ Arg Asn Ala Arg Phe₁₃₅ Arg Ala Cys Gln Ile₁₄₀ Ile Ser Glu Ile

Ile Leu Arg Leu Pro Asp₁₅₀ Glu Val Glu Val Ala₁₅₅ Asp Glu Leu Trp Asp₁₆₀

Asp Val Ile Asp Cys₁₆₅ Met Met Leu Arg Val₁₇₀ Arg Asp Lys Val Pro₁₇₅ Val

Ile Arg Thr Phe₁₈₀ Ala Val Arg Ser Leu₁₈₅ Ser Arg Phe Val Asn₁₉₀ Asp Pro

Glu Asn Ser₁₉₅ Asp Ile Leu Asp Leu₂₀₀ Leu Leu Glu Val Leu₂₀₅ Pro Leu Glu

Gln Asn Pro Glu Val Arg Lys₂₁₅ Thr Ile Val Leu Ser₂₂₀ Leu Pro Pro Ser

Asn Ala Thr Thr Gln Ala₂₃₀ Ile Ile Asp Cys Thr₂₃₅ Leu Asp Val Asn Glu₂₄₀

Ser Val Arg Lys Ala₂₄₅ Ala Tyr Ser Val Leu₂₅₀ Ala Asn Lys Val Pro₂₅₅ Leu

Gln Ser Leu Ser₂₆₀ Ile Lys Leu Arg Thr₂₆₅ Thr Ile Leu Gln Arg₂₇₀ Gly Leu

Ala Asp Arg Ala Val Asn Val Ser₂₈₀ Thr Glu Cys Leu Lys₂₈₅ Leu Met Lys

Glu Gln Trp Leu Ala Asn Tyr₂₉₅ Cys Glu Gly Asp Pro₃₀₀ Ile Thr Phe Leu

Lys Tyr Leu Asp Val Glu₃₁₀ Thr Tyr Glu Ser Val₃₁₅ Ala Glu Ser Ala Leu₃₂₀

Glu Val Leu Leu Ser₃₂₅ Glu Gly Leu Ile Met₃₃₀ Pro Ser Asp Asp Lys₃₃₅ Ser

Ile Gln Gln Tyr₃₄₀ Ile Leu Ser Ala Asp₃₄₅ Gly Glu Thr Arg Asp₃₅₀ Glu Ser

Thr Cys Ser Ala Pro Ser Ile Gln Leu Met Glu Pro Glu Ile Ala Leu
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Tyr Trp Arg Ile Ile Cys Arg Lys Val His Gln Ser Ala Gln Ala Lys
 370 375 380

Gly Ser Asp Ala Ala Thr Ala Met Gly Ala Glu Ala Ala Val Tyr Ala
 385 390 395 400

Ala Glu Ala Ser Asp Ala Asn Asp Leu Leu Glu Arg Ile Leu Pro Ala
 405 410 415

Thr Val Ser Asp Tyr Val Asp Leu Val Lys Ala His Ile Glu Ala Gly
 420 425 430

Pro Asn His His Phe Ala Ser Arg Gln Leu Leu Leu Leu Gly Thr Met
 435 440 445

Leu Asp Phe Ser Asp Ala Met Leu His Lys Thr Val Ser Ser Phe Val
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Gln Glu Leu Leu Arg Arg Pro Phe Glu Gln Glu Leu Asp Glu Asp Gly
 465 470 475 480

Asn Ser Ile Val Ile Gly Asp Gly Ile Asn Leu Gly Gly Asp Lys Asp
 485 490 495

Trp Ala Glu Ala Val Ser Lys Leu Ala Lys Lys Val His Ala Ala Pro
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Gly Glu Tyr Glu Glu Val Ile Leu Val Val Val Glu Glu Val Ala Arg
 515 520 525

Pro Cys Arg Glu Arg Thr Ala Asp Phe Leu Gln Trp Met His Met Leu
 530 535 540

Ser Leu Thr Ser Leu Leu Leu Glu Asn Gly Lys Ser Leu His Ser Leu
 545 550 555 560

Gln Gly Lys Ala Ile Glu Pro Glu Glu Ile Leu His Ala Leu Leu Leu
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Pro Gly Ala Lys His Thr His Leu Asp Val Gln Arg Ile Ala Ile Lys
 580 585 590

Gly Leu Gly Leu Phe Gly Leu Leu Glu Lys Lys Pro Ser Glu Glu Leu
 595 600 605

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Val Arg Gln Leu Arg Ala Ala Phe Cys Arg Ser Pro Pro Pro Ile Ser
610 615 620

Ile Met Ala Cys Lys Ala Leu Val Asp Leu Gly Met Trp His Ser Pro
625 630 635 640

Thr Glu Val Asp Lys Ala Met Gly Gln Asp Leu Leu Ser Gln Phe Glu
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Asp Asp Ser Ile Asp Phe Ala Pro Ile Asp Leu Ser Asn Ala Glu Glu
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Asp Met Asn Phe Lys Met Leu Asp Leu Leu Tyr Ala Gly Leu Glu Ser
675 680 685

Asp Asp Trp Arg Ala Ser Thr Glu Ser Ser Glu Asn Glu Ser Val Lys
690 695 700

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Tyr Pro Asn Leu Pro Ala Ser Phe Tyr Pro Phe Val Leu Gly Lys Leu
725 730 735

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755 760 765

His Lys Gly Tyr Val Ser Lys Ala Phe Val Pro Leu Val Arg Ser Met
770 775 780

Trp Pro Gly Ile Asp Gly Asn Thr Lys Ser Ser Ser Tyr Val Val Ser
785 790 795 800

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805 810 815

Met Gln Thr Pro Leu Tyr Lys Lys Glu Thr Arg Gly Glu Pro Glu Ser
820 825 830

Gln Val Asn Lys Ser Pro Glu Asp Ser Ile Gln His Pro Leu Asn Cys
835 840 845

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850 855 860

Lys Glu Lys Lys Thr Ala His Glu Lys Ala Tyr Val Ala Ala Leu Cys
 865 870 875 880

Lys Ile Leu Val Leu Leu His Leu Lys Pro Ser Glu Gln Asn Val Thr
 885 890 895

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Glu Lys Asp Leu Leu Lys Glu Val Lys Pro Val Leu Gln His Leu Lys
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Ser Leu Asp Ala Cys Pro Ser Glu Glu Leu Thr Gln Asp Gln Ala Asn
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Ser Ile Phe Glu Ile Leu Gly Val Ser Tyr Asn Leu Glu Ile Thr Glu
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Thr Thr Thr Val Pro Gln Thr Pro Ala Pro Cys Ser Thr Lys Pro Ala
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Arg Ser Arg Arg Arg Ala Arg Ile Glu Glu Thr Ser Ser Asp Glu Glu
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Glu Val Ala Ser Pro Pro Pro Ser Ala Pro Asn Thr Leu Met Thr Arg
 995 1000 1005

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tg	g	a	a	t	c	a	a	g	t	c	a	a	g	t	c	96
Trp	Ala	Asn	Gln	Ser	Ser	Ser	Gln	Ser	Ser	Leu	Ser	Pro	Arg	Tyr	Ser	
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ac	t	g	c	a	g	t	t	a	c	a	a	a	c	c	a	144
Thr	Trp	Gln	Cys	Val	Cys	Leu	Arg	Asn	Gln	Lys	Arg	Lys	Pro	Lys	Leu	
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Tyr	Leu	Ile	Pro	Ala	Arg	His	Phe	Leu	Ser	Thr	Pro	Ile	Asp	Ser	Val	
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gt	t	g	c	t	g	a	a	g	a	a	a	a	a	a	a	432
Val	Ala	Val	Lys	Glu	Glu	ctg	gat	tcg	ggt	ttg	aaa	ggt	atc	gaa	caa	
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gg	c	agt	atg	tat	tcg	gta	ata	ggg	aag	ttt	gaa	aac	gct	ata	ctc	624
Gly	Ser	Met	Tyr	Ser	Val	Ile	Gly	Lys	Phe	Glu	Asn	Ala	Ile	Leu	Val	
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ca	t	caa	agg	gct	att	cgt	ata	tta	gag	aat	aga	tat	ggt	aaa	tgc	672
His	Gln	Arg	Ala	Ile	Arg	Ile	Leu	Glu	Asn	Arg	Tyr	Gly	Lys	Cys	Asn	
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atc Ile	tta Leu	gaa Glu	cgg Arg 260	aat Asn	aga Arg	ggt Gly	tct Ser	gag Glu 265	agt Ser	gag Glu	gat Asp	cta Leu	gta Val 270	gtt Val	ccg Pro	816
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gca Ala 290	gaa Glu	att Ile	cct Pro	ttt Phe	acc Thr	agc Ser 295	att Ile	gta Val	aat Asn	ata Ile	tac Tyr 300	aag Lys	aag Lys	ata Ile	tac Tyr	912
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ctt Leu	ata Ile	aac Asn	ctt Leu	gca Ala 405	gca Ala	tct Ser	tat Tyr	tcg Ser	cgt Arg 410	tcc Ser	aag Lys	aat Asn	tat Tyr	gtg Val 415	gag Glu	1248
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Val Gly Glu Ala Leu Asp Cys Leu Val Ser Ile Gln Ala Arg Leu Gly							
			485			490	
aga gat gat gga gaa ata ttg ggt ttg ctg aaa agg gtt atg atg atc							1536
Arg Asp Asp Gly Glu Ile Leu Gly Leu Leu Lys Arg Val Met Met Ile							
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caa gag aaa gag ttt ggt cct tca gct caa gaa ctc att gtt act ctc							1584
Gln Glu Lys Glu Phe Gly Pro Ser Ala Gln Glu Leu Ile Val Thr Leu							
			515			525	
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Gln Lys Ile Ile His Phe Leu Glu Lys Leu Glu Met Lys Asp Asp Lys							
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ttt aag ttt agg aga aga tta gct tta ctt aga gag aga tac aag cag							1680
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			20				25					30			
Thr Trp Gln Cys Val Cys Leu Arg Asn Gln Lys Arg Lys Pro Lys Leu															
			35			40					45				
Tyr Leu Ile Pro Ala Arg His Phe Leu Ser Thr Pro Ile Asp Ser Val															
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Ser Ser Ser Ser Ile Thr Ala Ser Arg Tyr Ala Thr Ser Gly Val Ser															
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Glu Val Gln Arg Ser Thr Ser Ser Asn Asn Val Thr Glu Met Glu Glu															
				85				90					95		

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Phe Glu Met Glu Leu Gln Glu Leu Phe Asn Glu Val Lys Ser Met Val
 100 105 110

Lys Ile Gly Lys Glu Ser Asp Ala Met Asp Leu Leu Arg Ala Asn Tyr
 115 120 125

Val Ala Val Lys Glu Glu Leu Asp Ser Gly Leu Lys Gly Ile Glu Gln
 130 135 140

Ala Ala Val Leu Asp Ile Ile Ala Leu Gly Tyr Met Ala Val Gly Asp
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Leu Lys Pro Val Pro Ala Leu Leu Asp Met Ile Asn Lys Ile Val Asp
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Asn Leu Lys Asp Ser Glu Pro Leu Leu Asp Ser Val Leu Met His Val
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Gly Ser Met Tyr Ser Val Ile Gly Lys Phe Glu Asn Ala Ile Leu Val
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His Gln Arg Ala Ile Arg Ile Leu Glu Asn Arg Tyr Gly Lys Cys Asn
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Asp Gly Lys Ala Thr Lys Ala Ile Gly Val Tyr Glu Arg Thr Leu Thr
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Ala Glu Ile Pro Phe Thr Ser Ile Val Asn Ile Tyr Lys Lys Ile Tyr
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Gly Glu Arg Asp Gly Arg Val Gly Met Ala Met Cys Ser Leu Ala Asn
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Ala Lys Cys Ser Lys Gly Asp Ala Asn Glu Ala Val Asp Ile Tyr Arg
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Asn Ala Leu Arg Ile Ile Lys Asp Ser Asn Tyr Met Thr Ile Asp Asn
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Ser Ile Leu Glu Asn Met Arg Ile Asp Leu Ala Glu Leu Leu His Phe
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Val Gly Arg Gly Asp Glu Gly Arg Glu Leu Leu Glu Glu Cys Leu Leu
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Leu Ile Asn Leu Ala Ala Ser Tyr Ser Arg Ser Lys Asn Tyr Val Glu
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Gly Ser Glu Gly Gln Ser Ile Thr Phe Pro Met Leu Asn Leu Ala Val
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Thr Leu Ser Gln Leu Asn Arg Asp Glu Glu Ala Glu Gln Ile Ala Leu
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Lys Val Leu Arg Ile Arg Glu Lys Ala Phe Gly Glu Asp Ser Leu Pro
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Arg Asp Asp Gly Glu Ile Leu Gly Leu Leu Lys Arg Val Met Met Ile
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